In This Issue—*Difference Between Guarantee and Maintenance*

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MOTOR AGE

VOL. XL
Number 14

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CHICAGO, OCTOBER 6, 1921

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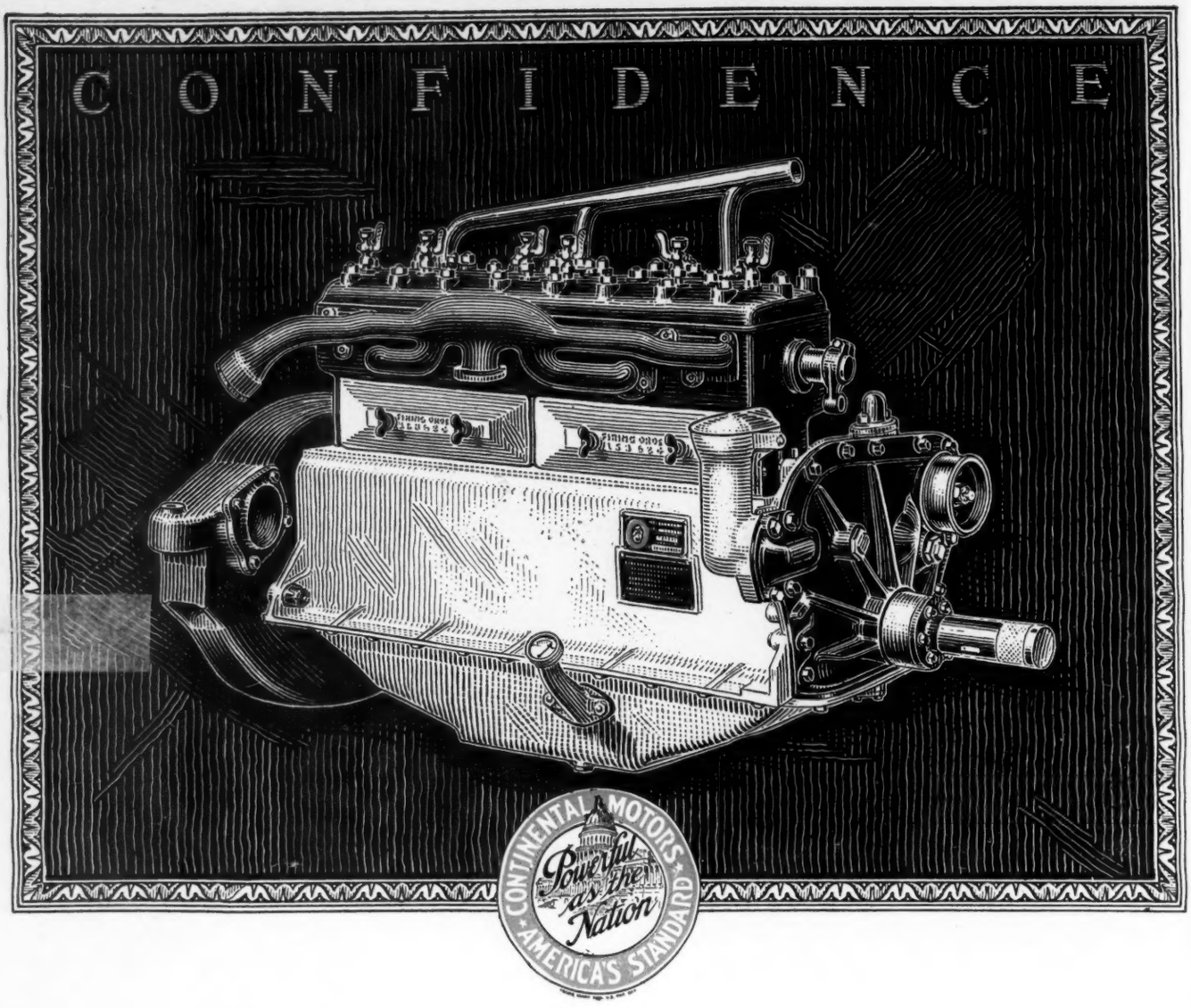

Continental achievements in the past have earned the whole-hearted CONFIDENCE of the motor using public. And, in a like manner, Continental co-operation in transporation undertakings has resulted in the complete CONFIDENCE of the automotive industry. ¶ This broadcast CONFIDENCE is gratifying, but it is not accepted by the Continental organization as a mere reward granted for past performances. It is accepted rather as a well defined obligation to strive for even greater achievements in the future. ¶ It is to be expected, therefore, that the product whose manufacture is characterized by such a spirit, will operate with unique precision—precision that unavoidably creates the impression that the motor, itself, possesses CONFIDENCE in its own ability—precision that is bound to enhance universal respect for that well known symbol of excellence —the Continental Red Seal.

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STANDARD POWER FOR AUTOMOBILES, TRUCKS AND TRACTORS

MOTOR AGE

Published Every Thursday by

THE CLASS JOURNAL COMPANY

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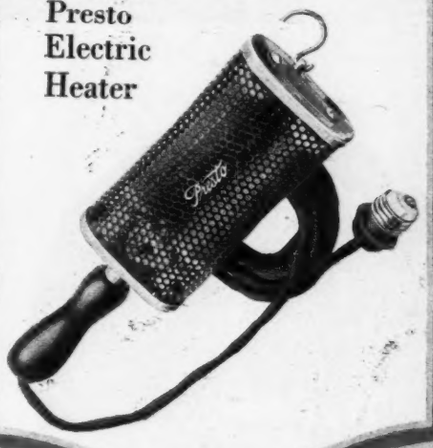

Keeps Up Profits in Cold Weather

Many of your sales fall off in winter time. Here's an opportunity to replace this loss with a device that has a big sale all winter —the PRESTO Electric Heater.

The Presto Heater keeps radiator and engine warm—prevents damage from coldest weather—makes engine easy to start, even in zero temperature.

Swivel hook allows heater to be attached anywhere under hood. Convenient wood handle, so that heater can be moved when hot. Plenty of heat where it is needed most. Saves expensive and often unsatisfactory heating of entire garage.

Write for catalog No. 21. Shows many other accessories—plugs, connectors, dash lamps, storm and glare visors, electric cigar lighters, etc.—that are good sellers and profit makers during winter months.

Metal Specialties Mfg. Co.

338-52 N. Kedzie Ave., Chicago, Ill.

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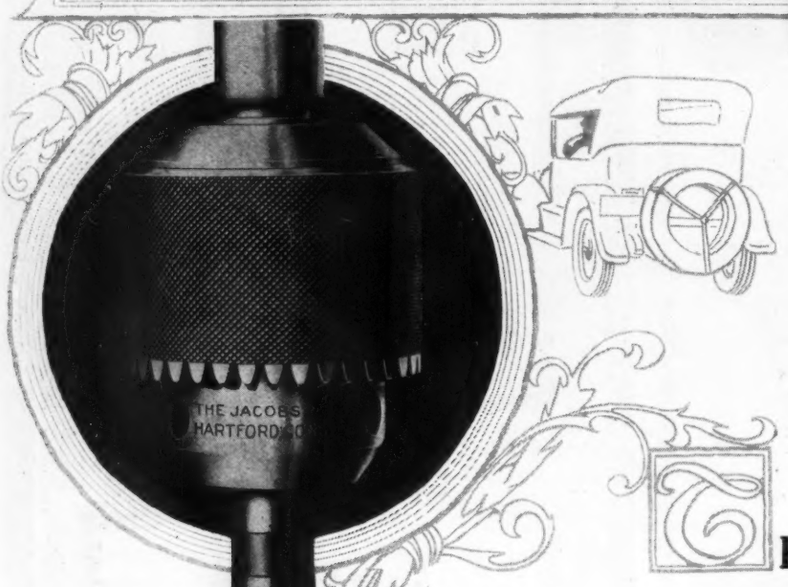

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can be secured in various styles and capacities suitable for every purpose in the modern garage.

Write The Standard Electric Tool Company of Cincinnati, Ohio, for complete description.

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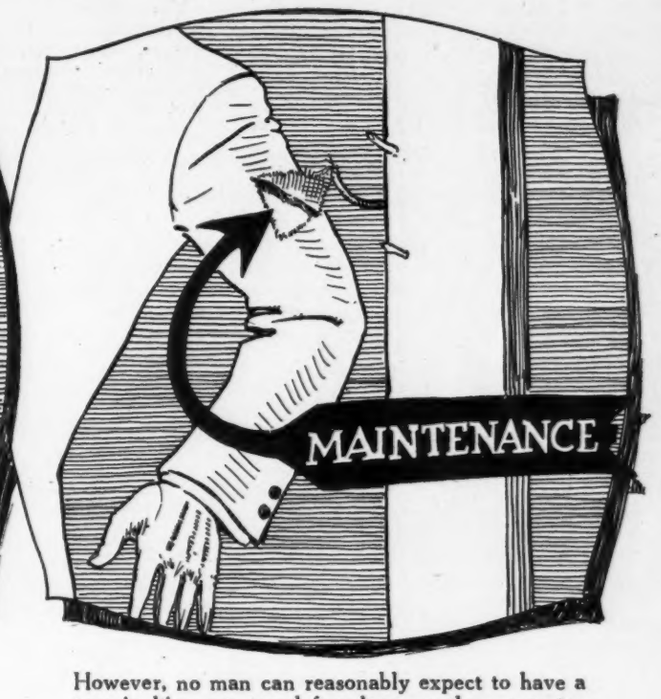
MOTOR AGE

If a suit with a pocket not sewed is sold to you by your tailor, because of careless inspection, it must be sewed without charge under the terms of a just guarantee that anything purchased must be in perfect condition



However, no man can reasonably expect to have a tear in his coat sewed free because the guarantee promised good workmanship. The same principle applies to motor cars, but dealers have allowed customers to interpret the guarantee too broadly, much to their sorrow and loss

The Difference Between Guarantee *and* Maintenance

Essential That Customer's Car Be in Perfect Running Order When Delivered; After That, Maintenance Begins and Should Be Paid For

By B. M. Ikert

THE reason why a good many men in the service end of the automobile business do not make more money is because they do not know the difference between guarantee and maintenance.

Perhaps it is well to state this a little differently. The reason why this business has not the same respect from the public as other businesses is because there is too much free service.

There was a time when one could go into a clothing store and, in buying a suit of clothes, have the merchant offer you the choice of a tie or pair of suspenders, which were thrown in free of charge with the purchase of the suit.

But merchants found out that there was no good reason in the world why a man should not pay for a pair of suspenders or tie the same as he did for any other piece of merchandise. He needed them. He would go into a store and buy them, so why make him a present of them?

We think just as much of a merchant these days

when, after we have bought a suit of clothes, he asks us, "Is there anything else—tie, socks, collars, etc.?" We know he has these things stocked for the prime purpose of selling them and not making us a present of them. If he gave away his merchandise, where would he be in the long run?

Suppose you have a tailor make a suit of clothes and on the next day you find the lining in a pocket has not been sewed. You go back to his place of business and he gladly fixes the pocket. It is part of the guarantee that went with the suit. The suit was made with the understanding that when the customer received it it would be finished. No tailor would charge for this kind of service, because it is but a continuation of the previous work in making and finishing the suit. He simply makes good on the guarantee.

But now suppose you tear a hole in the sleeve of that suit on the third or fourth day you have it. Do you go to the tailor and have him make the repair to the sleeve with the expectation that he is going to do it free of charge? You do not. The tailor has every right in the world to charge you a half dollar or dollar for the repair. The suit was delivered to you in perfect shape and he is not responsible for your tearing a hole in the sleeve.

Of course, there are a good many chances that tailors will do the job of repairing for nothing, and perhaps in the long run it builds good will for them; but if we are discussing here the question of whether or not the tailor is justified in charging for the repair on the torn sleeve, there can be but one answer.

Another instance. Suppose you have just finished building a house. The carpenters have left and you have moved into the place. You discover in a few days that one of the locks on the doors does not work properly. You call on the telephone the concern that built the place and it sends up a man to fix the lock. There is no charge for the work because it was part of the guarantee that went with the building of the house.

However, if the lady of the house decides in a week or two that she wants a change made in the shelves of the pantry, or if a three-year-old throws his baseball through the built-in china closet door glass, there is good reason to believe the change in the pantry shelves and installation of a new glass in the china closet should be paid for.

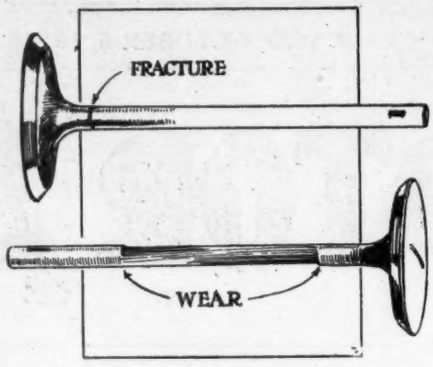
Again, suppose a shop buys a sensitive machine and a careless mechanic springs the shaft in it. Is it right to expect the maker of the machine to pay for this carelessness by taking back the old machine and exchanging it for a new one, or installing a new shaft in the machine? No. The machine was perfect when sold and delivered to the customer. The guarantee on it covered breakage and the ability to perform the work for which it was intended, but not abuse.

GUARANTEE INSURES DELIVERY IN FIRST-CLASS CONDITION

In distinguishing between guarantee and maintenance the essential thing to watch is that the product is right before turning it over to the customer. This applies to anything from a peck of potatoes delivered by the corner grocery to a string of new passenger coaches turned over to a railroad by a car works.

The tailor who makes the suit goes over it carefully to make sure everything is right. He wants to feel when the customer calls for it that the latter will be satisfied, pay his bill and feel like coming back for another suit later on. The tailor does not say, "if anything goes wrong with the suit, bring it back," etc. He does not have to do that. He knows that the suit was delivered in a condition as nearly perfect as is physically possible.

The contracting firm that built the house had an inspector look it over to make sure everything was right. The firm did not say to the owner, "If the floors get squeaky or the door hinges groan from want of oil, or the plate rail warps, let us know." The concern knows the house was properly built, but also knows that atmospheric conditions may affect floors; that the average householder never oils the hinges of the doors in his house, and that plate rails may warp in time.



Here are shown two valves, one fractured and the other worn out at the stem. If the first valve broke shortly after the owner got the car the dealer replaces it and there is no charge. It's part of the guarantee. However, when a stem wears, from natural use, it is replaced and must be charged for

The maker of machines knows that at the time of delivery his product was right. His inspection department has checked the alignment of parts and their accuracy; yet he knows that just the minute the machine is set in motion wear is going to take place, and sooner or later some maintenance work is necessary to bring the machine up to its original state of perfection.

Making sure that the product is right at the time of delivery and that it will remain right for a reasonable length of time if given the necessary care, is the thing that spells success for many institutions. Failure to do so means eventual ruin of the business. **It is this failure to have the product right at the time of delivery and the lack of backbone to stand behind this fact, that has caused many in the automobile business to fail. They could not distinguish between guarantee and service, or maintenance.**

DEALERS CANNOT DISTINGUISH BETWEEN GUARANTEE AND MAINTENANCE

Why should it be necessary for any automobile dealer who sells a customer a car to tell that customer to "drive around if anything goes wrong"?

Why should the dealer throw in a spotlight, bumper or motometer after having sold the customer a car?

Why should the dealer, after selling the car and throwing in the spotlight or bumper, tell the customer to drive around to the service department, where "they will gladly install it for him," free of charge?

Why should the customer be told that his brakes may need adjusting later on and "we shall be glad to do it for you"?

Why should a dealer, as we heard one say recently to a new customer, "Drive around some time and we will give your car a good wash and polish"?

In this business there is great need for dealers and service men to sit down and figure out ways and means for doing those things they know they ought to do and stop doing those things they know they should not do. Apparent lack of understanding on the part of the dealers of the terms guarantee and maintenance is another reason why the driving public looks with suspicion on the automobile business.

WHEN TO CHARGE FOR SERVICE WORK

When to charge for service work and when not to charge are questions quite easy to answer in the majority of instances. But before definite action can be taken it is necessary to know just where guarantee leaves off and maintenance begins.

The trouble in the past has been that there has not been a definite understanding between the customer and the dealer at the time of sale of the car. This lack of understanding has been responsible for many service institutions' not making profit. It is true that service is what keeps a good many cars sold, but this is not necessarily the prime purpose of the service station.

As we mentioned before, the maker of any machine knows that his product is going to wear the moment it is set in motion. He knows that in spite of the good material of which the parts are made, the accuracy of the machining, the provision for lubrication, etc., the machine is going to require adjustments and repairs, as time goes on.

What applies to such a machine applies equally well to the automobile, the truck or the tractor. The makers of automotive vehicles—most of them—have made provisions for turning out their product built as well as it is possible to

do so, After the distributor and dealers get these products they make sure that everything checks with the requirements of the maker and the customer. If everything has been done right the dealer's service department will have checked the car, tractor—or whatever it happens to be—so that it can be turned over into the hands of the customer with the assurance that nothing has been left undone that will warrant the customer coming back in a few days with a complaint.

GUARANTEE SHOULD PRACTICALLY CEASE UPON DELIVERY

The guarantee on a car, except for breakage of parts, should stop the moment the car is run out of the service station and turned over to the customer. The right system of inspection will have insured the facts that the car has been properly tuned, that the wheels are in alignment, that the brakes are adjusted, generator charging correctly and the many other little items that go to make a car operate in the hands of the customer as a finished product should.

It should be apparent to every customer that brakes will wear and need readjustment. It happens that the automobile is a vehicle in which there are a good many moving parts, some revolving very fast and others more slowly. Why a customer should feel, for instance, that a front wheel will run without attention, is difficult to see.

Our motor car catalogues are full of descriptive matter relating to the ease with which adjustments can be made. The makers of automotive vehicles have provided for wear. The customer reads about this and knows about it, but when he drives into the service station after using his car a month and finds the brakes do not hold, he expects the service department to do the necessary adjusting. It's a new car, he figures, and the brakes ought to work. And the service department, to keep on good terms with him, adjusts the brakes and may even give the chassis an inspection covering other things.

Those dealers who have been successful in drawing the lines where guarantee leaves off and service begins, generally have done so because of some system of inspection at the time the car is sold and of an understanding with the customer that his car is in proper condition, and from then on he is expected to pay for adjustments or repairs.

Once the customer knows he is responsible and must pay for service, he is quite likely to handle the car more carefully. A new engine can easily be ruined in the first few hundred miles of travel. The owner crowds it too hard—and what happens? There may be a burned-out bearing or a scored cylinder. It's a new car and naturally he comes back to the dealer and complains. "Why should his car need repairs so soon?" he asks. And the dealer, to keep his business and prevent his knocking the car to his friends, goes ahead and puts in a new bearing.

Had such a customer been sold upon the necessity of careful driving and shown what it would cost him for a new bearing or taking care of a scored cylinder, he would probably never have had reason to complain. We know of some dealers who sit down with the customer or have their service manager do so and point out the things the owner must do to expect the institution to make good on the guarantee. It is a good plan to take the instruction book that goes with the car and with a red pencil mark those paragraphs which are important. The owner will take the book at night and peruse it for a long time. Those red marks scare him, and the more he reads the paragraphs, the more likely will things go right with his car.

The salesmen who sell new cars should above all see to it that the prospect is given a clear understanding of what he may expect from the service department. Too often the prospect is told that "we have a dandy service department and they'll see to it that your car runs all right." The customer ought to be told that the service department will see to it that his car is delivered to him in perfect order, that there will be oil and grease where needed, that all the tools and equipment will be on the car, etc., but that thereafter they will be glad to sell him the services of the department. A salesman has just as good a chance to sell service as the new car—probably more so, because the car owner will probably frequent the service station more than he will the salesroom.

A certain dealer said one time when asked what reason he had for the fact that his service department was paying him a profit, "We make it a point that every car delivered to the customer is ready for him and we make him pay for every thing when he shows up later on." He has distinguished between guarantee and maintenance and lives up to the fact.

A Suggested New Car Inspection Report

Time .....
Started .....
Stopped .....

New Car Inspection Report

The items below must be checked before car is turned over to customer—Report defects immediately

Job No. .....

1—Adjust and lubricate front wheel bearings		20—Lubricate brake levers and clevis pins	
2—Test front wheels for alignment		21—Tighten battery terminals, fill battery with water	
3—Change oil in engine		22—Tighten battery clamps	
4—Tighten engine holding down bolts		23—Tighten all electric connections	
5—Tighten and oil hood fittings		24—Tighten gasoline tank	
6—Tighten and oil hood sills		25—Tighten rim bolts	
7—Tighten and oil all fender bolts		26—See that foot and hand throttles open and close carbureter	
8—Tighten windshield anchor bolts		27—See that fan belt is tight and pulley oiled	
9—Tighten instrument board bracket bolts and screws		28—Test gasoline line for leaks	
10—Test clutch for grabbing and slipping		29—Test horn	
11—Inspect torque arm and fill oil cup		30—See that generator is charging and oiled	
12—Lubricate clutch control lever and thrust bearing		31—See that distributer points are set properly	
13—Lubricate transmission		32—Adjust and equalize brakes	
14—Lubricate universal joint		33—See that pedal clear floor boards	
15—Replace floor boards properly		34—See that all lights operate	
16—Adjust and lubricate spring shackle bolts		35—See that doors open and close freely and that latches operate	
17—Test and lubricate steering gear		36—Test valves, ignition and carburetion	
18—Lubricate differential		37—Fill radiator and gasoline tank	
19—Lubricate rear universal joint		38—Clean and polish car for delivery	

REGULAR EQUIPMENT				EXTRA EQUIPMENT	
1—Extra rim or wheel		12—Tire pump		1—Spotlight	
2—Clock		13—Tool kit, containing following:		2—Extra tire	
3—Jack		14—Hammer		3—Shock absorbers	
4—Tire repair outfit		15—Pliers		4—Hood and radiator cover	
5—Rim tool		16—Wrench		5—Lenses	
6—Windshield weather strip		17—End wrenches		6—Mirror	
7—Top boot		18—Rim wrench		7—Fire extinguisher	
8—Side curtains		19—Hub wrench		8—Monograms or initials	
9—Keys for switch and gearshift lock		20—Punch		9—Motometer	
10—Starting crank		21—Chisel		10—Bumpers	
11—Instruction book and parts book		22—Oil can		11—Windshield cleaner	
		23—License clamp			

Passed by ..... Manager

Signed ..... Mechanic

This sort of inspection chart is a big asset in making sure the customer's car is in order for him to receive it. It will, when used properly, eliminate much of the difficulty in ascertaining what is guarantee and what is maintenance

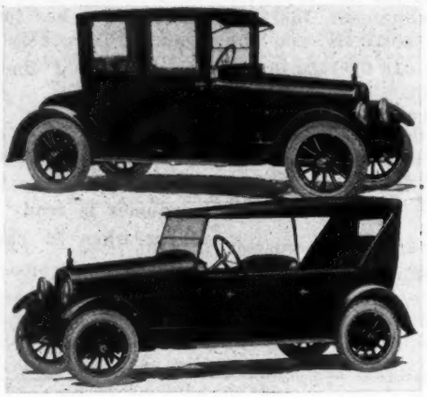
New Hudson Designed Largely for Driving Ease

Super-Six Engine the Same Except for Change in Air Intake and Manifolding. Gear Shifting Has Been Made Easier. Body Lines Remain the Same

FEATURED principally by changes which effect ease of control, the new Hudson super-six model is now in production and being delivered to dealers. Practically every change made in the new car makes for the convenience of the driver. In carrying out these changes, the entire front compartment has been redesigned a' . the details of the control mecl..nism have been so improved as to provide easier steering, easier pedal and control lever action. In a word, the car has been made more suitable to women drivers.

In working out the improved control, changes have been made in the clutch and transmission, resulting in a lighter clutch pedal action, as well as an easier gearshift. The brake linkage has also been altered so as to give an easier leverage. In addition to these improvements in the control mechanism of the car, there have been some changes in appearance—particularly in the adoption of new fenders and front apron—and also some improved body fittings.

The super-six engine which has been in use since 1916 has been continued without any fundamental alterations. One important change, however, has been effected in the air intake and manifolding. It has previously been Hudson practice to use cold air. On the new car, all of the air for the carbureter is pre-heated. In making this change, the



The Hudson touring and coupe. Body lines have not been changed in the new model

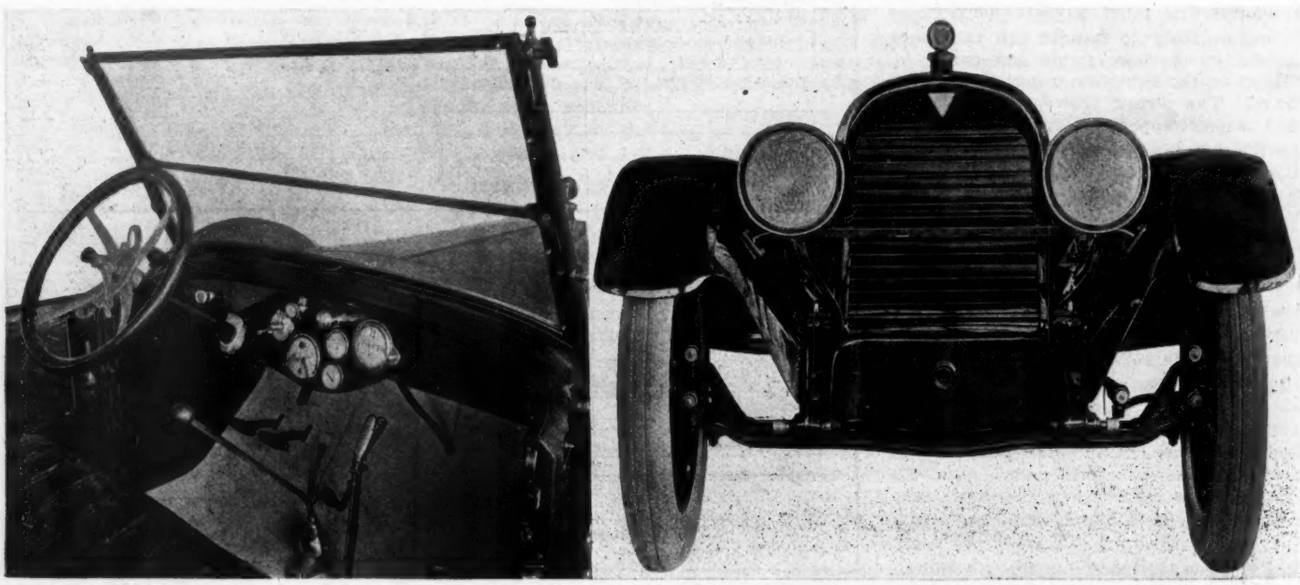
Hudson engineers have taken into consideration the fact that one of the main objections to the use of all hot air is the tendency towards restriction in the air intake manifold, particularly at the elbows.

In order to avoid this difficulty, globe elbow joints are used, giving a large volume of piping at the turns and avoiding any tendency towards restriction in the manifolding. There is another globe at the point of maximum depression just before entering the carbureter, this being the largest of the three globes used in conducting the air from the hot air stove, which is integral with the exhaust manifold on the right side of the engine, to the carbureter, which is located on the left side and mounted on a vertical flange at about the center of the block. Thus, the hot air is conducted over the top of the engine to the carbureter.

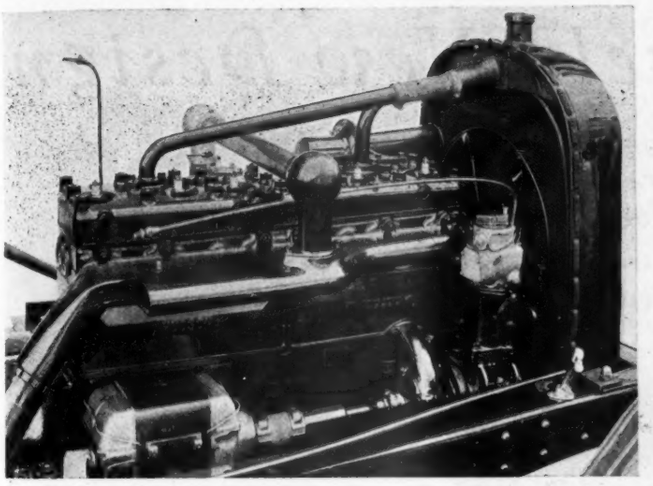
Air pressure balance on the carbureter is secured by a compensating tube which connects the air intake with the float chamber. This is an economy feature, as it conserves gasoline on quick throttle opening.

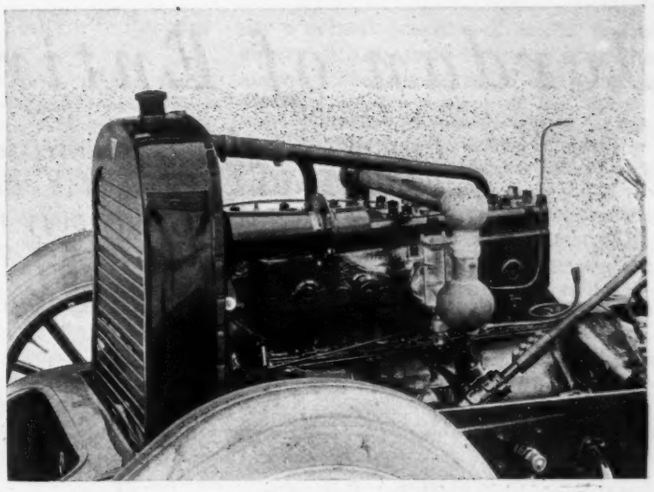
Internally, the manifolding has also been altered, so that a modified form of hotspot is provided between Nos. 1 and 2 and 5 and 6 cylinders. The intake manifold at these two points is brought into close proximity with the exhaust and a pocket formation is provided in the intake so as to revaporize any condensation at these points. This aids materially in shortening the warming-up period.

While the clutch employed in the new Hudson is fundamentally the same as that in the old, considerable change has been made for the purpose of making gearshifting easier. This has been accomplished by using lighter weights for the parts which revolve with the transmission shaft. In the new construction, the transmission shaft is continued forward and forms the clutch shaft, elim-



Left—The front compartment of the new Hudson, which has been changed to give more driving comfort. Right—New fenders and splash apron.





Two engine views showing the method of heating the air. Restriction of the air flow at the elbows has been overcome by the use of globe elbows.

inating the three-jaw slip joint used formerly as a connection between the clutch and transmission shaft.

This shaft has a pilot bearing in the clutch and carries the driven disks on a die cast aluminum drum. These driven disks are light thin disks and do not carry the cork inserts which are now in the driving disks. Formerly, the driven disks carried these cork inserts and were the heavier of the two sets. This drum also carries cup shaped inserts which act as the clutch spring retainers.

There are eight clutch springs spaced equally about the aluminum drum, giving a balanced pressure entirely around the clutch. The clutch release spider depresses these clutch springs for relieving the pressure on the clutch during disengagement. Actual separation of the clutch plates is taken care of by small springs placed between the clutch disks. The use of these springs gives a balanced disengagement which prevents any tilting of the disks. In addition to the disengaging springs, there are also anti-rattle springs placed between the disks so as to prevent noise when the clutch is disengaged and relieved of pressure.

The clutch thrust bearing grease cup used in previous models has been eliminated by incorporating a large annular ball throwout bearing automatically lubricated by the clutch oil.

One of the advantages of the new clutch is that because of the die cast drum and the exhaustive use of stampings, the effect is the same from a balanced standpoint as if the parts were machined accurately all over. This gives a balanced clutch which is manufactured at a reasonable cost and without any exceptional amount of machining work.

The new gearset is not materially different from the old. Some of the changes in the gearset have been made to accommodate the new clutch. The transmission shaft is extended forward as described, and the shifter mechanism is now mounted in a subassembly with the top cover plate. The speedometer drive has been enclosed and is now with the gearbox.

The gear shifter lever has been lengthened and the ball handle placed close to the driver's hand, making gear shifting considerably easier, not only because of the lightened clutch action, but also of the more accessible and longer lever.

TURNING MADE EASIER BY CHANGING RATIO OF STEERING GEARS

Another change which is concerned with the ease of operation of the car is in the emergency brake lever. In addition to greater leverage, the ratchet has now been made heavier and the ratchet teeth larger. In order that this change does not effect the number of positions in which the brake lever may be placed, there are now two pawls employed which come into action alternately and give the effect of twice the number of teeth, also making for an easier release.

Ease of steering has been secured by changing the ratio of the steering gear from 7½ to 1 to 9½ to 1. This not only has the effect of making the wheel easier to manipulate, but also results in a heavier worm wheel with consequently longer life and greater qualities of wear resistance. The drag link is now a one-piece tube instead of being welded in the usual way. With the lighter steering control and the clutch surface brake pedal action responding to a lighter pressure of the foot, the handling of the car has been made a much lighter task.

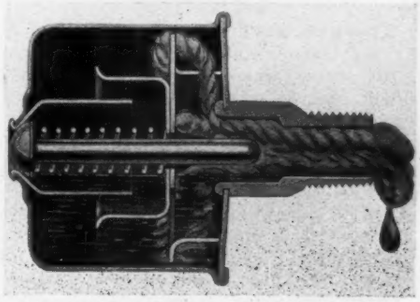
The accelerator pedal is now placed to the right of the brake pedal and is designed to allow for a restful foot position. It is also possible to rest the feet on the inclined front floorboard, because of the new pedal arrangement which also is an advantage in that it makes a long drive less tiring.

The lubricating points on the chassis are taken care of by a new type of oiler which does away with the old fashioned grease cups. The oiler contains a reservoir and a wick feed. A new type of pump oil can is also provided with the car so that the oil is forced into the oil cups and then is fed from the reservoirs which are contained in the cup to the points to be lubricated by means of the wick feeds.

In exterior appearance, the Hudson is little changed. The deep crown fenders which, because of the increased depth of flange are more efficient as mud guards, have replaced the previous type. The front fenders now have aprons that extend to the extreme front end of the spring hangers. There is a splash apron placed between the front spring horn, which not only improves the appearance of the car, but also affords further protection.

The wheelbase of the car remains the same, as do all of the major specifications. The tire size remains the same also, but the tires now provided as standard equipment are cord in place of fabric. In the detail work of the body, there have been a few changes, although the body lines remain the same. The door jams are now of pressed steel in place of wood, and consequently more durable and solid. There is also an improved type of side curtain, giving better weather protection. The windshield is now fitted with a metal strip with a rubber interlining between the two windshield glasses, giving complete weather protection at the front end. No change of price has been made.

Wick Oilers Used on Hudson

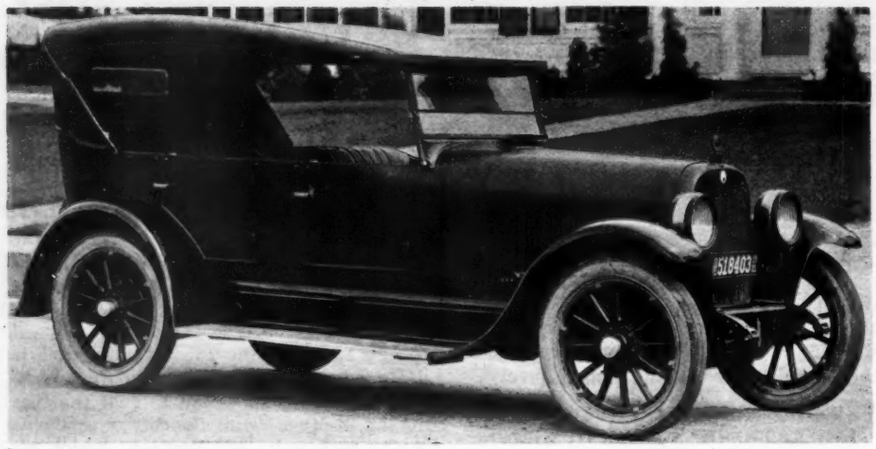


Lubricating points on the Hudson chassis now are taken care of by a new oiler having a reservoir and wick feed. Oil is forced into the cups by a new type of pump oil can and is then fed to the point of lubrication by the wick.

Jordan of Entirely New Design

Engine, Clutch, Transmission, Frame and Body Differ From Units Used Last Year—Many of the Parts Made Exclusively for This Car

By J. Edward Schipper
Detroit Representative of the Class Journal Co.



New Jordan touring car. Note the inside hood louvres, the new design headlamps and the cowl ventilator. External door handles and a tubular front cross-member are among the exterior differences between this year's Jordan and last. New design headlamps are used on this year's Jordan, fitted with the Warner Paterson lens

AN entirely new Jordan, incorporating a new engine, new clutch and transmission units and axles, mounted on a new frame and fitted with a new line of bodies, is in regular production and being shipped to dealers. While the individual parts are still the products of leading parts makers, in many instances these units have been designed for and are used exclusively in the Jordan car. For example, the engine is used solely in this car.

Longer life, better performance and greater comfort for driver and passengers have been the objectives in laying out the new car, and while the foundation for the new design has been the Jordan of the past, the improvements have been so many and varied that the resulting product differs materially from its predecessor. Although in general outline the new product is unmistakably a Jordan car, from a structural standpoint, there is hardly a unit which has not been altered in greater or less degree and improved upon, in order to secure the objects mentioned.

The entire supporting structure of the car has been stiffened. If the frame used in the older model were lying upon the floor and two men stood upon one side rail, it would be possible to lift the other side rail one or two feet in the air before the side bearing the men was lifted from the ground. This year the flexure would only be a few inches.

The result of this construction is considerably less weave in the body and consequently greatly increased freedom from squeaks and rattles and other ills which develop from frame flexure. This has been accomplished by the use of side rails of parallel depth for a much greater portion of the length of the rail. In addition to this, tubular cross-members have been placed at both ends. These cross-members are secured to the frame by riveting through steel castings which project into the tube and are keyed to the tube to prevent twisting. Improved riveting and gusseting of the cross-members have also been effective in increasing the rigidity of the frame without eliminating flexibility.

HEAVY CRANKSHAFT ELIMINATES ENGINE VIBRATION

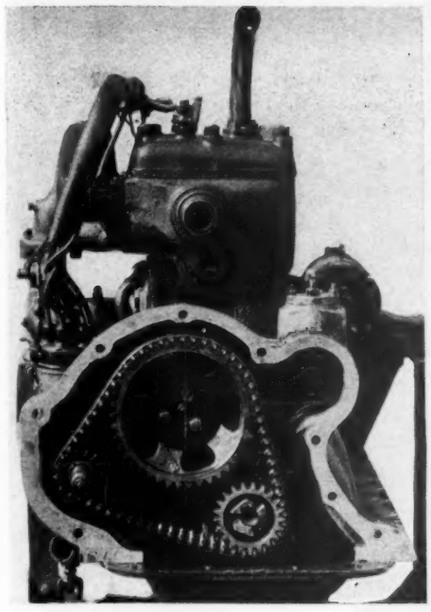
The new powerplant, which is made by the Continental company, is mounted with three-point suspension and is a block cast, six-cylinder, unit powerplant type. The head, cylinder blocks and crankcases are cast separately and, differing from most unit powerplants, the flywheel housing is cast separately from the crankcase, but bolted to it. The cylinder head and cylinder blocks are grey iron, the crankcase, aluminum, and the clutch housing is also a separate aluminum casting. The engine is a 3 5/16 by 4¾ in., L-head, four-bearing crankshaft type.

One of the outstanding features of the engine is its freedom from vibration, largely secured by a 2½ in. crankshaft, which, in connection with the four bearings, gives an exceedingly rigid construction with the result that any period which does exist seems to be above the driving range and consequently not to be noted in handling the car. The comparison ratio in the engine is 22½ per cent, giving about a 70 lb. per sq. in. absolute compression pressure.

The pistons are cast iron, weighing 22 oz. They are 3 5/16 in. in length and have three rings all above the wrist pin. The bottom piston land is chamfered and drilled to provide an oil drain. The piston ring widths are 3/16 in., and the piston pin diameter is 55/64 in. The piston pin bearing is in the top of the connecting rod, the piston pin being clamped in the boss and held by a lock screw which passes all the way through the piston pin and into the opposite side of the piston pin boss. In addition to securing the piston pin in this manner, an additional safeguard against the piston pin creeping against the inside of the cylinder is incorporated in the form of registering grooves into which a spring ring is inserted which prevents side motion of the piston pin.

The connecting rods are I-beam construction, machined all over, and 10½ in. in length. The lower rod bearing is 2¼ in. in diameter, except the front, which is 2¼ in. By making the rod bearings at the ends of the throws lighter than the main bearings, the torsonial vibration of the crankshaft has been materially reduced. The connecting rod caps are secured by two bolts of alloy steel. The lengths of the main bearings from front to rear are 2⅜, 1-9/16, 1-9/16 and 3-1/16 in.

A new departure for the Jordan company is the use of silent chain drive at the front end of the engine. This drive is a triangular layout, the Morse chain passing over the crankshaft, camshaft and auxiliary shaft sprocket. Adjustment on the chain is secured by swinging the auxiliary shaft outward until the proper tension is applied on the chain. This adjustment is accessible, and the units driven by the shaft are so arranged that they are not effected by the adjustment. This auxiliary shaft carries the fan pulley at the front end in advance of the timing chain case. Immediately behind the timing chain is the vertical distributer shaft driven by spiral gears, the oil pump, water pump



The front end drive on the Jordan motor is by Morse silent chain this year. Note the triangular layout which provides a drive for the camshaft as well as the auxiliary shaft

and, behind two flexible couplings, the generator.

The distributer, oil pump and water pump all move as a unit when the adjustment is made. The rubber hose connection for the water pump and the two flexible shafts for the generator permit sufficient movement of this shaft to make any necessary adjustment of the chain without effecting the water feed, or the generator drive. In connection with this layout, the forward end of the water pump body and the oil pump housing are in one casting, which gives a very compact arrangement, fitting in very neatly with this type of auxiliary drive.

The camshaft is mounted on four bearings, whose diameters and lengths are, respectively, from front to rear: 2-5/16 by 2-3/64; 2-9/32 by 1; 2¼ by 1, and 2 7/32 by 1⅝ in. The valves are driven through mushroom followers. They are 1-43/64 in. outside diameter and have a lift of 5/16 in. The engine is timed to fire 1-5-3-6-2-4, and the valve timed so that the exhaust opens 40 deg. ahead of lower center and closes at 8 deg. past upper center, and the inlet opens 12 deg. past upper center and closes 40 deg. past lower center. The entire valve layout is designed to be particularly accessible. The valve tappet guides, for instance, can be removed without taking off the cylinder block. The guides are held by clamps which are accessible when the cover plates are removed.

LARGE OIL FILLER OPENING FACILITATES PRIMING

Water circulation is by centrifugal pump. The water system has a capacity of 4½ gal. The radiator is a Sparks-Withington cellular type and is supported in an original and interesting manner. The radiator rests in a cradle consisting of a strap which passes entirely around the shell and clamps at the frame line. This method of mounting the radiator is very similar to that employed in mounting the gasoline tank and seems to work out very satisfactorily, particularly in that it does not put any stresses on any isolated portion of the radiator, but distributes them over the entire circumference. The incoming water for the cylinders enters under the exhaust valves in two places, and in the layout of the cylinder block, ample water space has been provided around the exhaust valves and spark plugs.

Pressure feed by which the oil is under a normal pressure of 20 lbs. to the square inch, is used for lubricating the engine. The gear type of oil pump is driven from the bottom of the distributer shaft and forces the oil to a thin steel gallery tube which is cast integrally with the crankcase. From this main tube, there are feeder tubes to each of the main bearings where the oil passes into the hollow crankshaft. Drilled leads in the crankshaft conduct the oil to the lower connecting rod bearings.

The timing chain receives oil from the main overflow, which is caught in a pocket at the front end of the main gallery tube and led by a passage over the chain. There is also a bleeder lead to the chain so that this unit is continually operating in a bath of oil. The pressure regulator is located also at the front end of the gallery tube and is easily adjusted to provide the proper tension on the spring pressure relief. There is an oil pressure gage which is mounted on the dash and is in communication with the rear end of the main gallery feed.

One of the interesting points of the engine is the extremely large oil filler opening mounted at the front end of the engine in such a way that oil can be readily poured into it without spilling. The oil passage has been made large enough so that the oil may be poured into the crankcase as rapidly as desired. There is also a plainly visible dial which indicates the amount of oil in the crankcase.

The fuel system is fed from a 16 gal. tank of square section mounted at the rear of the chassis between the side frame rails. A new type of spring bayonet cap is used on the filler, preventing any trouble with crossed threads. The gasoline is fed by vacuum to a 1¼ in. plain tube Stromberg carbureter. The

Below—The gasoline tank this year fits between the frame side rails in an improved mounting and form. Note the bayonet lock on the filler cap instead of screw threads. Right—The instrument board on the Jordan has been tirely redesigned and has been cut away to provide additional knee room in the driver's compartment

This front end view of the Jordan illustrates a few of the changes such as the cowl ventilator, the tubular front cross-member and the new design headlamps

intake manifold is a hot-spot type, but with somewhat less heat applied than in the previous model, since it has been found that the efficiency of the engine was slightly impaired during hot weather by overheating of the intake. The new hotspot provides a compromise which meets conditions satisfactorily for both summer and winter.

Delco equipment is used for starting, lighting and ignition. The starter is mounted on the left side with a pilot type mounting and the generator on the right side at the end of the auxiliary shaft, as described. A separate pad is bolted on the crankcase, and the generator mounted on this pad.

The clutch is a dry, single-plate type manufactured by the Detroit Gear & Machine Co., which concern also makes the transmission gearset. This is a three-speed, selective unit, and from the driver's standpoint, has been improved by lengthening the shifter lever. The ratios in the gearbox are 3.2 to 1 on low; 1.72 to 1 on second and 3.68 to 1 on reverse. The drive is delivered to a hollow propeller shaft with two Spicer type universals.

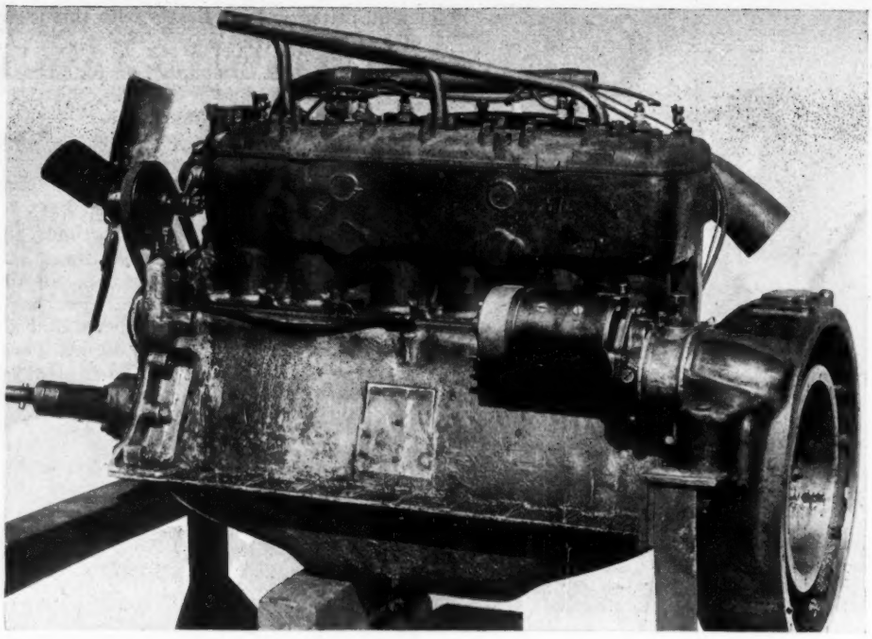
The rear axle is a Timken floating design of new model. Following a recent tendency in axle design, this new axle has a bearing on both sides of the pinion, supporting the pinion shaft. It is a spiral bevel type, providing a ratio of 4 2/3 to 1 for the closed bodies and 4 5/12 to 1 for the open bodies. The car is mounted on semi-elliptic springs 37 by 2 in. long in front and 56¼ by 2 in. long at the rear. Steering is by Gemmer gear.

While the new bodies are not materially altered in outline, they are considerably changed in minor detail and fittings. They are all mounted on the standard 120 in. wheelbase chassis. The standard tire size is 32 by 4 in. Some of the body detail work is particularly interesting, as it departs from usual practice. For instance, the louvres in the hood, instead of being on the outside, are now on the inside—an unusual construction claimed to be more efficient in drawing the air from beneath the hood.

STEEL PARTS "PARKERIZED" TO PREVENT RUST

Another interesting feature is the rust-proofing of the car. Practically every bolt and screw on the exposed parts of the car is brass, nickel plated. This also applies to a large percentage of the hardware. The parts which have necessarily to be of steel, have been Parkerized.

For the convenience of the driver, as well as for the sake of appearance, the entire front compartment has been rearranged. There is a new instrument board in which all of the instruments are under one glass. The board has been cut away at both sides so as to provide a greater amount of knee-room for the driver and the passenger occupying the front seat. The starting switch has now been placed upon the toe board instead of back near the front seat, so that it is now impossible for anyone to accidentally step on the starter button when entering the car. The switch plunger itself has a mushroom type head which permits the shedding of rain water and prevents it from entering into the switch parts.



Side view of the new six-cylinder engine which is used exclusively in the Jordan car

For the prevention of rattles and other noises about the car, there has been a considerable amount of detail refinement. The muffler is now a two-compartment instead of a single compartment type, to eliminate exhaust sounds under any condition. The muffler tail pipe has been extended back of the rear end of the body so as to prevent any chance of exhaust impulses giving a drumming sound, particularly in closed bodies.

The Jordan patented anti-rattle shackles, in which the shackles are held under spring pressure at all times, have been improved and are used on both the front and rear springs. The dash board separating the engine compartment from the body has been backed with special material to destroy its resonance.

Grease cups, located in places where owners are not apt to give them attention, have been removed and oilless bushings substituted where they are practical; where they are not practical—in such places as on the brake shaft—a lead of flexible tubing has been brought back and clipped to the rear spring so that the Alemite attachment may be readily applied for lubricating this point. The front end of the drag link, which was formerly packed with grease, when assembled, and not provided with any lubrication beyond this, has now been provided with an Alemite attachment.

The small tools are now mounted in the left front door, which is provided with a steel door and padlock for protection. The tools are snugly fixed in the door so that they cannot rattle. There is now a transmission lock which projects above the floor-board and locks the transmission in neutral by pushing down on the lock. Another anti-rattle feature is found at attachment of the top and windshield. The top is now secured to the windshield by means of a nut, which gives a positive, non-rattling anchor. There is a cowl ventilator to cool the front compartment, and the windshield has been made rain-tight by a new form of rubber stripping. The side curtains have been taken out of the top and put in door compartments.

For more comfortable seating, the seats are lower and tilted at a greater angle. Marshall cushions are employed, and for greater convenience in driving and ease of control, the brake centers have been very carefully laid out so that flexure of the springs does not effect the position of the brake pedal or emergency brake lever on rough roads. Prices for the new Jordan are as follows:

Silhouette, 5-passenger	$2095
Playboy roadster	2095
Brougham	3200
Sedan, 5-passenger	3200
Landaulet	2595

LEE OFFERS NEW TIRE

New York, Oct. 5—The Lee Tire & Rubber Co. is producing a new tire known as the Lee 22 Zig Zag, 30 by 3½, priced at $13.75 and suitable for Ford, Maxwell, Overland and Chevrolet cars. This figure has been fixed, the company states, in anticipation of 1922 prices.

PACKARD DENIES POLAND REPORT

Detroit, Oct. 4—The Packard Motor Car Co. denies that it has purchased an assembling plant in Poland. Such a proposal was made to the company several months ago, but it never was considered seriously.

Oil Pumping Cannot Be Cured with Heavier Oil

Overhauling and Fitting of New Parts Necessary in Engines Which Knock as Result of Wear. Dilution of Oil Big Factor in Engine Destruction

NOT infrequently one goes into a service station or repairshop and hears a service man or mechanic advise a car owner to "use heavier oil" in order to overcome oil pumping.

The assumption that a heavier oil will overcome this difficulty is pure fallacy. Many believed in the old days, and some do yet, that as the cylinders and pistons of an engine wear, oil with a heavy body should be used to make up for the difference in the thickness of the oil required to effect a seal.

"When an engine "pumps oil" it generally means that too much lubricating oil is being used in proportion to the time the engine is run. Naturally, the spark plugs get fouled and there is quite an accumulation of carbon on the piston heads, valves and cylinder head.

When heavier oil is used in an engine whose cylinder walls and pistons are worn, this oil will be consumed in excessive amounts, just the same as with the "oil pumping" going on when a lighter oil is used. This is so because, while it is true a heavy oil will be burned up more slowly, it is equally true that when a heavy oil works its way into the combustion chambers in excessive amounts it is not completely burned up, but remains in the form of carbon, and the deposit builds up very rapidly.

The service man and mechanic will do well to bear in mind that the rate of engine wear is an important factor to consider in lubrication. All engines do not wear out at the same rate and all oiling systems do not work equally well with the same grade of oil.

Take cylinder material, for instance. Some makers ream, some bore and some grind their cylinders to a finish. Then too, there are wide variations in the materials used. Some cylinder blocks may not be seasoned as long as others and the rate of wear in such cylinders will vary from those in which the blocks have not been machined until the stock has been seasoned for a long period.

There is also the human element to consider. Some car owners will faithfully carry out the instructions of the maker and drain the crankcase every 500 miles. Others drive their new cars at excessive speeds and burn up the engine, accelerating the wear. All of the factors must be considered in determining good engine lubrication.

The reason car makers and engine makers are insistent upon the owner's running the engine at moderate speeds only for the first 500 or 1000 miles, is that the metallic surfaces of the pistons, cylinders, rings and bearings must be given a chance to wear in. These surfaces are only as smooth as the method of finishing them in the factory permits.

Where cars and engines are made by the thousands it is not possible to work the rubbing surfaces to a highly polished finish. This must be done when the car is in the hands of the owner. The surfaces are rough, comparatively speaking, and must be brought to a condition similar to that secured when cylinders and pistons are lapped in.

The wear in an engine will be rapid in the first few hundred miles of travel, after which the process slows up. If the engine has not been abused, the wear after the first thousand miles will be very gradual. As the wear goes on there is a noticeable pounding in the engine, and when this occurs, the only remedy is the tearing down of the engine and the installing of new pistons, rings and probably the regrinding of the cylinder walls.

There is something to be said about oil dilution also. We know that the fuel we get today is not as volatile as that of a few years ago, though it is superior as regards the power obtainable per gallon. Now this heavier grade of fuel is harder to vaporize, especially in cold weather. To get an explosion, priming is resorted to—and right here is where much damage is done to an engine. If ignition is good, the engine probably will start because a little of the fuel has become vaporized at that particular engine temperature. But most of the gasoline remains unvaporized and washes the oil from the cylinder walls. It does not take long for a piston or cylinder to score under these conditions.

Then there enters again the human element. Many drivers forget to "unchoke" the engine, and a vast amount of unnecessary fuel is drawn into the cylinders for a long period. This raw fuel mixes with the oil on the cylinder walls and gradually finds its way into the crankcase sump. Result, the oil is reduced to the consistency of a thin liquid and has no lubricating value whatever.

It is well to bear in mind, too, that a cylinder which "misses" allows fuel to get into the oil in even greater volume than when the cylinder fires, because none of the fuel is burned.

Now that cold weather is coming on in many sections of the country, it would be well for the service stations operating in such sections to give thought to the lubrication of their customers' engines. It does not take long to ruin a set of cylinders and pistons by too much of the choke in winter. There should be more thought given to easy starting by proper priming and introduction of heat.

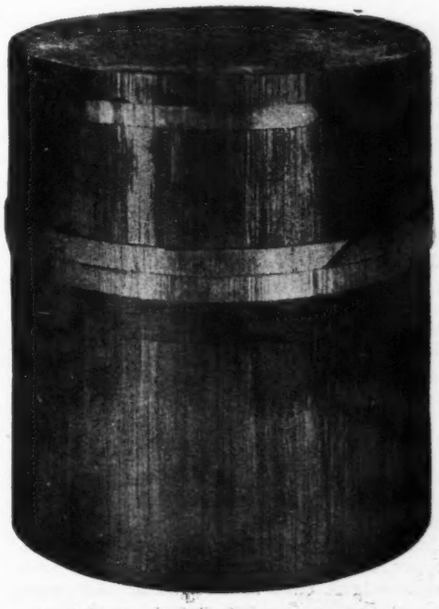
THE NEGLECTED PARTS

IN checking over the repair jobs that come into the service station it becomes apparent that most car owners are pretty careful to see that the engine and transmission of their cars are lubricated. They know that without these important units functioning, their cars will not run.

The sadly neglected parts, so far as lubrication is concerned, are the universal joints (if of the metal type), brake rocker shafts, torque tube yoke end trunnions, spring shackles, torque arm hinges, steering knuckles and several other parts of the chassis, including, very often, the rear axle gears.

The car will run even if these parts are not properly lubricated, but every squeak and squawk of the chassis usually can be attributed to some one or more of these parts, which, having become dry from want of lubricant, are protesting loudly against wearing out.

It is this neglect that has caused one car maker, just announcing a new model, to equip the clutch throwout shaft, brake rocker shaft, etc., with bronze bearings having graphite inserts. This means the car owner can forget the lubrication of these parts, as he generally does with such parts when they are lubricated with oil or grease cups.



Here is an illustration of a piston that has become scored, due to too much use of the choke. The engine was primed so much that the raw fuel cut the oil film on the cylinder walls and made the parts run dry

Planning Filling Station for Efficiency

Some of the Principles Underlying Most Economical Use of Space and Efficient Arrangement of Pumps and Cars

By Tom Wilder

IN spite of the struggle of dealers in small towns to keep all branches of the trade under one roof, there is a decided tendency in larger places to specialize. This tendency makes its first and strongest appearance in the establishment of gasoline and oil filling stations.

Filling stations are more popular with the motorist than curb pumps, for several reasons.

First, there is more room. If someone is already at the pump, the motorist can drive in at the other side, stop his engine and wait for service, while in the case of the curb pump's being busy, he must drive up behind the other customer, idle his motor for an indefinite period until the other driver is out of the way and then drive ahead.

Second, there is usually better service. At the filling station the attendants are there to sell gas and oil—nothing else and are always on the job, while at the garage curb pump there are a hundred other things to do and the pump man is usually doing some one of them, the result being that the customer must blow his horn and make a great fuss, sometimes even having to go out and hunt the attendant out of the shop.

Third, the chances are against the curb pump dealer in his charges. The filling station can fix prices at the minimum and make money because it sells a large volume for cash and knows at the end of the day exactly where it stands. The garageman has his regular customer to whom he thinks he must give credit, and unless he is unusually methodical, not only loses accounts but foregts to make note of sales, and for this reason must charge a cent or two more a gallon to come through with a small profit.

Altogether, then, the filling station has the best of it. The superior service and assurance of lowest prices soon gain the motorist's confidence and where there are good filling stations they get the lion's share of the fuel trade.

SUCCESS PRINCIPLES FOR FILLING STATIONS

There are so many who propose going into the gas and oil selling business who fail to grasp the difference between a filling station and a curb pump, that a few of the principles involved will not be out of the way.

While there are hundreds and even thousands of possible layouts there are only a few underlying rules and, if these

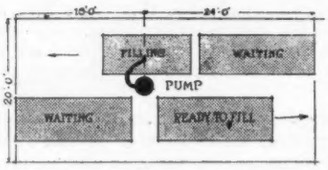


Fig. 1

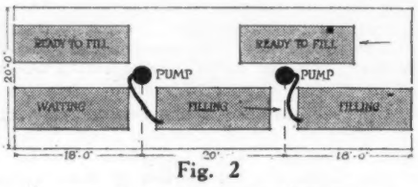


Fig. 2

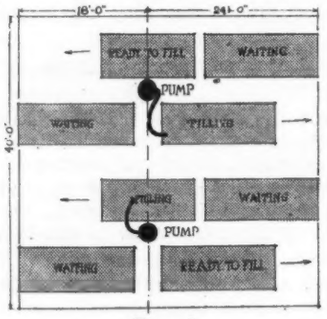


Fig. 3

Diagrams showing economical arrangement of one or two pumps

are observed, maximum efficiency with minimum equipment can be attained.

One thing should always be avoided; never place the free air and water connections where they can in any way interfere with cars approaching or at the pumps. Many make this mistake and remedy it later at considerable expense.

It is an extravagance to install more pumps than necessary, so if we always arrange them so that two cars may stand at each pump with more in waiting, we will be sure that the pumps will work to their capacity, and at the same time customers will not have to wait for more than one car, unless there is an unusual rush.

Fig. 1 shows the best possible position of one pump to give maximum service. Here it is placed between two 10 ft. driveways which should be 36 to 48 ft. long. This will allow two rear-tank cars to be in filling position and two more to take their places. Should two center-tank cars like Fords or Marmons be at the pumps, the waiting cars could not approach so closely and would require space of 48 ft. to accommodate four cars.

When two pumps are arranged in tandem between two driveways, as in Fig. 2, they must be 20 ft. between centers but 24 to 26 ft. would be better, so that a center tank car will not prevent a rear tank car from driving into filling position.

It will be seen that if all the cars were either center tank or rear tank, much space could be saved.

There would be no advantage in placing more than two pumps in tandem because as long as one car was standing, it would hold up the whole line on its side, but as many pumps as desirable may be placed abreast, Fig. 3, also E, Fig. 4, or if space were more suitable, Fig. 2 might be repeated abreast as many times as desired, thus doubling the number of pumps.

These three arrangements may be adapted to any plot that is large enough to contain them and permit cars to get in and out without congestion.

In the case of Figs. 1 and 2, a driveway is needed connecting the public highway on both sides either across a corner, around and out on the same street, or across a block to another street.

Whatever the scheme, pumps must be so placed that cars will not project across the sidewalk or we may find ourselves in trouble with the city authorities.

Another thing to guard against is sharp turns necessitated by trying to utilize a plot that is too small. Cramped quarters are the greatest foe of efficiency; if one car has to wait for another to get out of the way before it can get to the pump, much time will be lost for both customer and station owner.

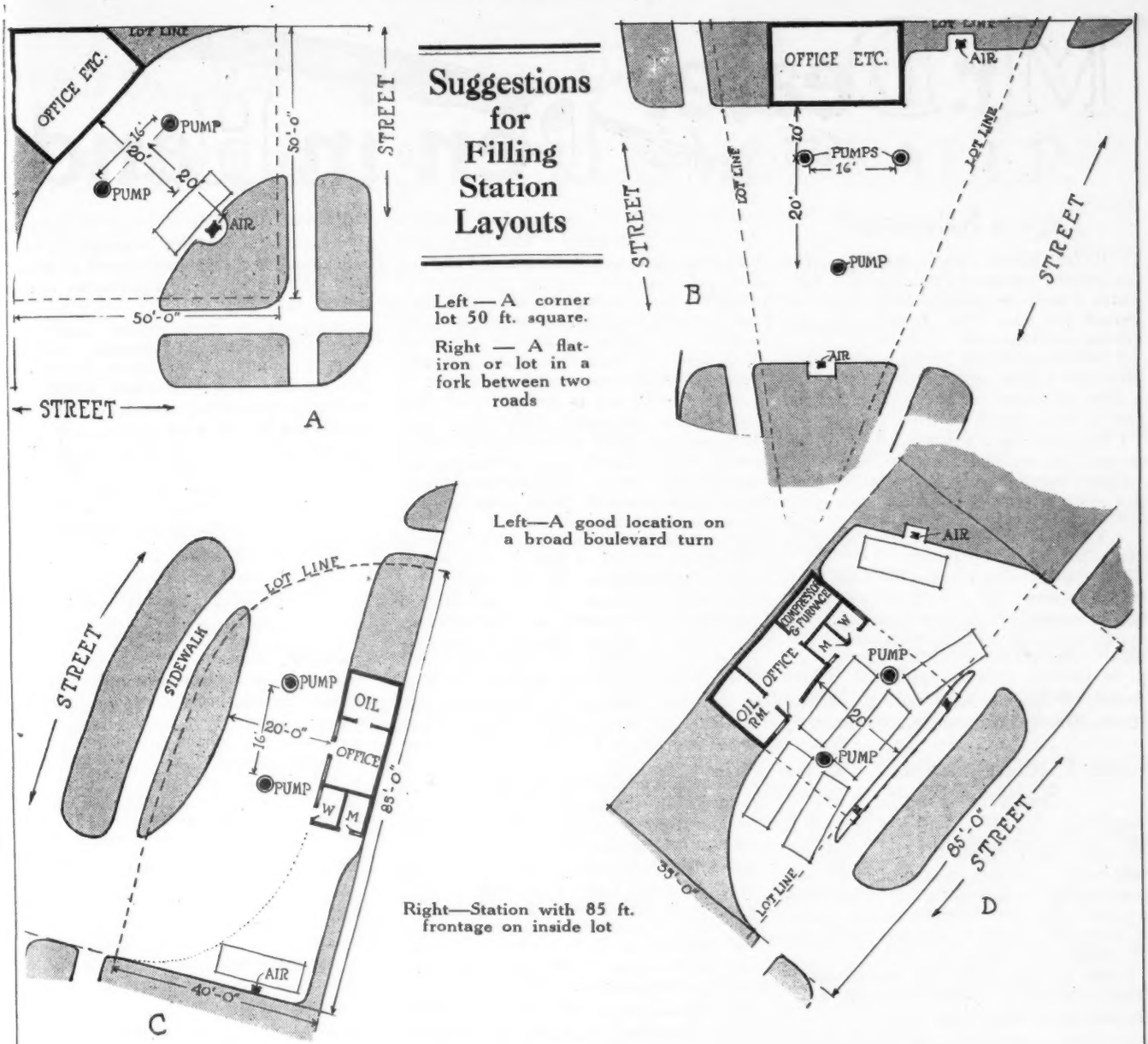
There is always the question of protection from rain and in sections where it rains early and often such protection is desirable, but in the average climate shelters are not necessary by any means. It must be admitted, however, that other things being equal, the station with a shelter would do more business on a rainy day than the station without.

There is not much that can be said in general regarding the buildings. They may be merely the attendant's office or they may be a complete garage, but lavatories are quite desirable under any circumstances and especially where the station is on a through highway used by tourists. Whatever the size of the building, the space allotted to the filling station should not vary, though there is a general tendency to try to put too many operations on a small lot. One

Suggestions for Filling Station Layouts

Left — A corner lot 50 ft. square.

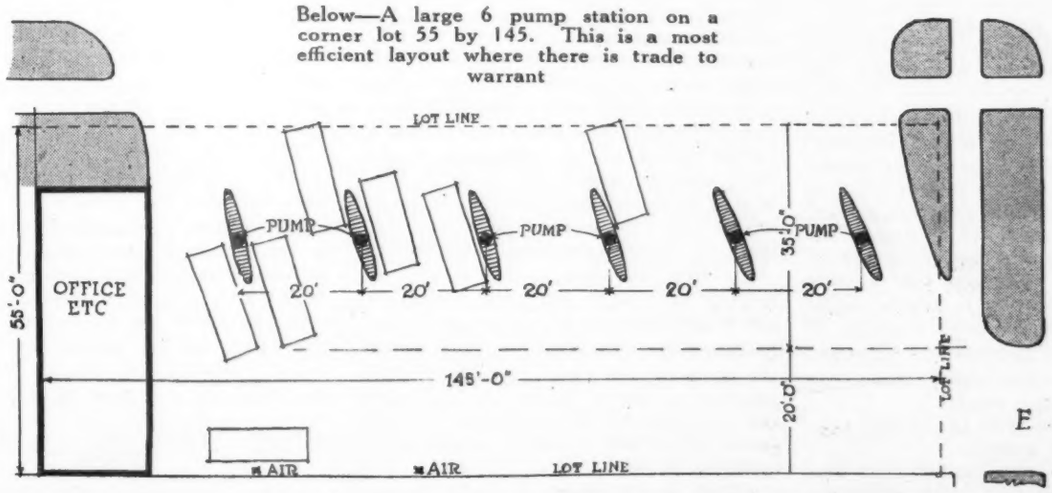
Right — A flat-iron or lot in a fork between two roads



Left—A good location on a broad boulevard turn

Right—Station with 85 ft. frontage on inside lot

Below—A large 6 pump station on a corner lot 55 by 145. This is a most efficient layout where there is trade to warrant



man will devote a lot 50 by 100 ft. to a filling station exclusively, while another will expect to get good results with repairshop, storage garage, showroom, accessory store and filling station all on the same sized lot. If the space cannot be increased it would be much better to stick to the curb pump, as the small, one might almost say imitation, filling station is no more efficient than the curb pump and uses much valuable space.

Mr. Dealer takes his Pen in Hand

Page a Salesman!

EDITOR, MOTOR AGE: I take care of a private garage containing five cars, which I keep in complete repair, do the buying for, etc. May I make the following observations?

I have been in my present place since 1913, and I have never been solicited by a tire salesman, although I use from $700 to $900 worth of tires yearly.

I have not been approached by an oil or gasoline salesman in two years.

I have never been called upon by anyone selling garage equipment, even after stating to the salesmen themselves that I was in the market for a welding outfit and other minor equipment.

For the last two months we have been in the market for a car, to replace a four-year-old Franklin sedan; and the indifferent, indolent, impossible salesmen! One man needed to refer to his price lists to give us the price of one model of his car—one costing around $3300. George W. Ganger, Dayton, O.

One Factory's Method of Selling Parts

EDITOR, MOTOR AGE: In replying to your favor of recent date I am not only sending the information desired, but I am going to add some comment that I think should be brought to the minds of those interested in the well-being of the automotive industry. It is this:

There is apparently no concentrated effort to establish confidence among buyers anywhere along the line.

As illustrative of my contention, I am now receiving a series of sales letters from a factory sales department; one on my desk deals with the subject of pirate parts manufacturers, and the writer is trying to convince me, or rather trying to justify his factory, on the parts question, in face of the most extortionate practice I have ever known in any business, outside our own. This same manufacturer, through his service department, put one over on one of my customers who was a satisfied user of his make of car. We lost him on this practice, and when he recently bought a new car he did not even consider us on account of the profiteering practiced by this concern—and many others—in selling parts to car owners.

Then, the dealer was in for his contribution to their greed!

There are many common practices that are un-businesslike and unfair to people who have bought an automobile in good faith, believing that they will be treated with reason when they will need replacements.

The cause of the customer referred to above is as follows: He had occasion to replace a flywheel. The parts book supplied to him by the maker was put out late in May, during the peak of prices. The part was listed at $20. This he ordered from the book, giving the number of the part correctly. I examined the order and O. K.'d it. The part came through wrong and at a cost of $34 f. o. b. It had to be returned. The car owner protested both price and charges for extra transportation costs, owing to the fault's lying at the factory service department. The second replacement came through right, with another charge for transportation, and added to this a charge of 10 per cent for handling the returned part. I was allowed 20 per cent commission on my contract and I allowed a credit of two transportation charges, because under no circumstances were they a proper charge to the customer. I protested, but when my credit came through later the amounts included as handling charges in this transaction exceeded my commission considerably—and the company has a knocker, and we have no alibi.

Another maker lists his hub caps at $2.80. Our commission is 15 per cent. We had trouble getting the part from the distributor and appealed to the manufacturers for three caps; they informed us they could not make a practice of selling dealers parts, but under the circumstances they did bill us three caps and they charged us $1.50 each, less 33 per cent. Don't you think this stimulates purchases from pirate makers?

My experience in three years has completely disgusted me with the business ethics of every department of the automobile business. I am an enthusiast about automobiles, and feel keenly the fact that I cannot do an honorable business, keep my friends and patrons, and sell cars to them—but it cannot be done under the practices that have grown up in the efforts of the higher-ups to pass their mistakes and losses on to the man who is so unfortunate as to have bought a car and who must depend on conditions at present covering replacements.

My own judgment is that this is due largely to makers of parts contracting not to sell parts to anyone except manufacturers of cars, who exclusively supply the parts for the use of the owner. This involves a heavy overcharge to cover the handling of the part and, in most cases, abnormal profits to each person handling it.

This is easily comparable with the cost of similar articles of hardware sold from the hardware trade or electrical parts bought from electrical makers and jobbers.

I bought pirate parts because I could buy them from 25 to 50 per cent cheaper than from the service department and sold them for a reasonable profit at much less than our service department asked me for them.

These questionable points come up even in MOTOR AGE! I remember reading in your columns a statement about the price policy of the Overland people, in which the possibility of a reduction was repudiated by the head of that company and published by you under heavy display lines two days after a reduction was announced in the New York papers. They even fooled you! This is actual experience. Yours very truly, W. E. Crossley, Steubenville, O.

Improving Battery Service

EDITOR, MOTOR AGE: We are in the battery and electrical business and we have found that many times battery failure is directly due to insufficient charging or to no charging at all. On machines equipped with neither indicator nor ammeter, or with only the indicator, frequently, with a little explanation, we are able to sell the customer an ammeter.

When a man comes in with a case of battery failure due to too low a charging rate or to failure of the generator, we point out to him that with an ammeter he can always see just how much current his battery is receiving, detect any trouble almost as soon as it occurs and have it remedied before his battery goes dead.

In the case of cars equipped with the indicator we show that an indicator is a poor substitute for an ammeter and that an ammeter is a constant record of the exact amount of the charging rate and not merely just an indication the generator is working. In the case of machines like the former models of the Dodge, we explain that we can furnish a shunted meter at a very reasonable figure and that the labor cost is very low.

Our testers are advised to be on the watch for machines without ammeters or with only the indicators and to speak to the patrons and, if possible, persuade them to allow the salesmen to explain the value of an ammeter. The plan works very well. Yours very truly, W. V. Henry, San Jose, Calif.

PISTON CLEARANCE IN LYCOMING ENGINE

Piston clearance in the Lycoming 3½ by 5 engine, as published in the September 15 issue of MOTOR AGE, page 15, was erroneous. The correct clearance, as supplied by the Lycoming Motors Corp., Williamsport, Pa., is 0.0025 to 0.003.

What One Manufacturer Says About

FUTURE STATUS of DEALER

Emphasizes That Dealer, Not Maker, Is Backbone of Automotive Industry—Policies Will Be Worked Out on Cooperative Plan That Will Not Be Pro-factory

"WE MANUFACTURERS are going to come to regard the man who disposes of our goods as being not our servant, but the backbone of our business; and it will be good for us to do a great deal of thinking along that line, for if I read the signs of the times correctly, there is going on today among dealers in all lines of goods an activity that is leading toward cooperative independence of the manufacturer."

This statement was made by George C. Hubbs, vice president and general manager of the Grant Motor Car Co.

"I have attended a number of meeting of dealers in automobiles in the last few months, and I know that there are questions that are being discussed by dealers that, if worked out satisfactorily to them, are going to force the manufacturer into very much more of a dependent position than he has permitted himself to be in heretofore.

"The development in the trade is not going to bring about either a pro-dealer or pro-manufacturer policy. But the time is not far distant when dealer and manufacturer are going to sit down and work out certain policies that are now dictated to the dealer by the manufacturer. There are going to be more sales managers who will call in the dealers and seek their counsel as to what policy ought to be pursued in the marketing of cars than there will be sales managers who will tell the dealers just what to do.

"Some manufacturers may have thought they are the backbone of the automobile industry; they are sadly mistaker. **The dealer is the backbone of the industry.** Most manufacturers seem obsessed with the idea that they are the pivot around which their industries revolve; that the dealer is an individual who cannot reach the manufacturer, and so the latter has a contact with the dealer that is about as pro-factory as it is possible for one to be.

"I feel very sure that some of our manufacturers have overlooked the fact that their dealers have, in the aggregate, as much money, or more, invested in the manufacturer's business than the manufacturer has himself, and that the combined or aggregate credits which the individual dealers command are far greater than those which the manufacturer can call to his support.

"So the manufacturer is merely the agency that provides cars to the backbone of the automobile industry, and no manufacturer can afford to force the dealer, deliberately and knowingly, to bear the full brunt of losses occasioned by changing models and lowering prices. He may do it once or twice, but he cannot persist and build up his business.

"But it is not a one-sided question by any means. The manufacturer has the right to the best that the dealer ha in him. In fact, the makers of cars have the right to expect the dealer to be as good and efficient throughout the agency contract as he admitted he was in his application for the agency.

"The dealer has the right to expect that the manufacturer's car will be as good when delivered as the advertising represents it to be."

Mr. Hubbs submitted the foregoing when he was asked the question, "How do you sell cars?" His selling campaign with the dealers is contained in the statement made by him, and the dealer, of course, is helped by the usual advertising.

As to the future of such a policy and its ability to dispose of cars when backed by intelligent effort, Mr. Hubbs says that the sale of cars in the long run is going to be as large as it would have been had the money market not tightened.

He declared that in the past the automobile trade was stiffened by the fact that owners rebought frequently. They were proud of nice, new, shiny cars, and so they sold every year and bought new ones. Just now they are holding onto their cars longer; but while they are holding on, the motors and other parts of the machine are wearing out, and unless the owners decide to replace their cars with horses and buggies, they will be back in the market in numbers that will increase with the loosening of the money market. There are big times ahead for the industry.

RED CROSS FIFTH ANNUAL ROLL CALL

IN connection with the Fifth Annual Roll Call of the Red Cross, Nov. 11 to 24, during which time all old members are asked to renew their yearly subscriptions to the organization, attention is called to the First-Aid movement of the society, which has broadened so that it now takes in cases of those injured in automobile accidents. The American Red Cross asks that automobile dealers give this part of the work special attention and, whenever possible, organize classes in first-aid work. The nearest Red Cross chapter will furnish all information and aid in formation of these classes that may do so much to lessen the suffering and encourage the safety first idea in the automotive industry.

MOTOR AGE

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Future of the Dealer

AN IMPORTANT DEALER—by that we mean a dealer who has been in the business a long time, one who has prospered and who has a large following of satisfied owners, wrote to a member of the MOTOR AGE staff the other day, and in this letter was this paragraph:

> "Whenever I come in contact with dealers, the first topic of conversation is, 'Will motor cars be shipped on consignment in the future?' or, 'Will trading be discontinued?' or, 'Will cars in the future be sold for cash, or practically so?'"

This correspondent had undoubtedly hit upon the questions that are foremost in the minds of foresighted dealers, and upon questions that at present are uppermost in the minds of the factory executives. Within the last month there has been a great change in the mental attitude of the factory executive as to his job. Two years ago he measured his success by his ability to get cars manufactured. Now he is measuring his success by his ability to get cars sold. Now, for the first time in their experience, some factory executives regard the dealer as a highly important part of the organization.

A good many factory executives are entirely willing to admit that they do not know the answer to many of the problems before them. Factory sales plans are being changed. The contract that served between factory and dealers in previous years is being altered in many respects. The factory executive is anxious to get on intimate terms with his dealers, but in many cases he does not know exactly how to accomplish this. The factory executive and the dealer are often thinking along entirely different lines, and they need to get well enough acquainted to be frank to each other.

In the reply to the letter above quoted, MOTOR AGE asked this dealer to be the first to discuss these questions in the pages of this publication. We have placed at his disposal adequate space for the statement of his views, because we know that he is a clear thinker and is quite as apt to lift the veil that hides the future as any man in the business. But no one man is going to answer the questions he has stated, to the satisfaction of all. So we are suggesting that other dealers who have ideas on this subject should state their views. It is an old saying that "In a multitude of counsel there is wisdom." That holds as long as the mob does not confound public opinion. MOTOR AGE believes that it can serve no better purpose than to assist in blazing the path for a future prosperous and equitable dealer policy.

Selling Transportation

AUTOMOTIVE vehicle dealers should never lose sight of the fact that they are sellers of transportation and not merely purveyors of vehicles to those who obviously want vehicles for a very definite purpose. An interesting story has been told lately of an automotive dealer who is a member of the chamber of commerce of a southwestern city.

The members of this business organization came to a realization that the package freight distribution from a larger city, some distance from their market, was making grave inroads on the jobbing trade of the smaller city. The merchants in the smaller towns liked the package freight idea, because they knew exactly when they would receive the shipments from the larger and more distant city. The distribution service from the smaller city was dependent upon the more or less uncertain local freight distribution, the uncertainty of which is known to all receivers and shippers of freight.

A meeting was held with the railroads carrying freight from the smaller city, but the railroad men were unable, they said, to offer a solution, as the smaller city did not have the volume of freight to insure a car being set aside for certain towns and shipped at a certain time. The automotive dealer member of the chamber pondered on this question in the seclusion of his own office and came to the conclusion that truck freight lines would care for most of the territory included in the jobbing district of his city. He worked out a schedule of the trips that a truck should make, arrived at an approximate cost of such service, and hinted at return loads as a means of lessening this cost. He did not make mention of the trucks that he would like so much to sell. He was too big and forward a merchant to do that. His report dwelt only on the service these modern freight transportation vehicles would be to the business houses of his city.

This report was read to the chamber of commerce, a committee was appointed, and one day the plan was approved. Never mind who sold the trucks. That is entirely immaterial. The main thing is that the

chamber of commerce backed the idea. The truck transportation lines were established.

Just what the rest of the story is, we cannot at this time tell, but the soundness of the proposition is apparent. The jobbers of this city are advertising to their customers, within a wide scope of country, something like this:

"An order received in our store as late as 4 p.m. will be delivered at your store by the opening of business the following morning."

No one store could afford to do this. It is by grouping all of the shipments for this small town that a truck can afford to make the trip. Already there are signs that the return load business will cut the cost almost in half. This is a bit of business enterprise made possible by the fact that one of the members of the chamber of commerce had an adequate grasp of the possibilities of his own business, a sufficient confidence in himself to present the solution of a serious problem to his fellow business men, and a proper appreciation of the truck as a freight transportation means. It is probable that this situation was one that the railroads could not handle, for the railroad at present has not the flexible units of transportation to cope with the truck for certain work. There will come a time some day, when the line between the truck and the railroad is more clearly defined, and then the truck dealer will wonder what blinded him to the possibilities of his merchandise for so long a period.

Unemployment Conference Results

THERE were many persons who scoffed at the idea that a conference of leaders meeting in Washington could or would do anything to relieve the unemployment so much talked of at present in this country.

It seems, however, that this conference has acted sanely and has made some practical suggestions that can and doubtless will relieve the situation to a considerable extent. The extent of the relief afforded depends upon how far the thousands of employers in this country are willing to accept the suggestions made. Among the suggestions offered are these:

> Manufacturing for stocks.
>
> Construction and repair work so badly needed in many plants.
>
> Reduction of the number of hours a day and the number of days a week for men now employed, so as to spread the work over a larger number of employes. This also may include rotation of work, or the split week.

These suggestions are easily understood and every employer can follow them to some extent. The man now employing two men full time, with perhaps occasional overtime, could employ four for at least part time. Suppose that instead of laying off one man in the shop two of them are given part-time work.

The dealers throughout the country can help with the suggestion as to manufacturing for stocks. It has been a common remark among salesmen for automotive equipment and accessory houses that orders during the recent months have been for immediate wants only. Dealers who formerly bought spark plugs by the gross have been buying by the dozen only, and often their stocks were inadequate to meet the demands of the day. Sales have been lost because there was no stock on the shelves.

This is poor business policy. The dealer or the service man who has cut his stock of goods or his staff of employes to the bone is a poor hustler for business. When he reduces his liability to the lowest possible notch, he automatically reduces his business-getting ambition at the same ratio. If a dealer sees a gross of spark plugs staring at him from his shelves, he will stir himself and his salesmen to get rid of them, and in so doing will make some money for himself. If he has an idle man on his payroll in the shop, he will hustle for business and automatically create business. The idle man will be put at work and everybody will be happy and more prosperous.

There is nothing that will cause the earnest man to work so hard as a liability. For the last few months we have all of us been victims of a pessimism that comes from other industries. Registration figures show that there were more cars and trucks in use the first six months of this year than for any other year. The reports of gasoline sales show that more gasoline was used than ever before in a like period. There must have been a greater automotive mileage than for any like period, and yet some automotive tradesmen talk about poor business. It is true that the production of cars has not been up to the previous mark for the first half of the year, but the service man and the equipment dealer is not so much concerned with production as he is with use. The use has been there, but some of the pessimists have refused to take advantage of it.

Now, if all hands will pull together, the unemployment in the automotive industry can be cleared up in a hurry. The slack of the men not needed in the production end of the business can be taken up by the ever-growing service end of the industry.

Automotive Equipment for the Shop

GOOD equipment is a valuable asset for any shop. There can be no question but that equipment often is responsible for the success of a shop. It speeds up operation, and with good equipment a relatively poor mechanic often can turn out a creditable job.

Inspection of automotive shops reveals the fact that much of the equipment has been made in the shop by the men, in spite of the fact that the market affords such equipment made by manufacturers of machinery.

Further inspection and questioning as to the reason for making this equipment right in the shop instead of buying what the market affords, generally bring forth the statement that the latter class of goods is too expensive. Unfortunately much automotive equipment for the shop is placed at a ridiculously high price, and it is little wonder that shops pass it up and make their own.

The old line houses who furnish drill presses, lathes, etc., are not offenders along this line so much as those who make special equipment like aligning jigs, stands, cylinder refinishing tools, wrenches, etc. It is possible to buy a wrench in a hardware store for $1.75, and yet one must pay $2.25 for the same wrench when it is listed as an "automotive wrench." A stand for holding rear axles may sell for $75—still a handy man around the shop can make a stand from a few pieces of angle iron and wood and the whole outfit will not set back the shop more than $5 or $6. The time seems ripe when we should think these things over.

Propose $50,000,000 Automotive Merger

Jackson Motors Leads in New $50,000,000 Merger

Traffic Truck, Herschell-Spillman, and Covert Gear Said to Be Other Members of Combine

NEW YORK, Oct. 3—Creditors of the Jackson Motors Corp. had presented to them at a meeting in Jackson, Mich., Sept. 29, a proposal that they sanction entrance of that company into a $50,000,000 merger of automotive concerns.

Details of the negotiations for the consolidation have been kept a close secret but it is understood that the companies which will be taken in will include the Traffic Motor Corp., the Covert Gear Co. and the Herschell-Spillman Co. Efforts were made some time ago to interest in the plan the National Motor Car & Vehicle Corp. of Indianapolis, The Liberty Motor Car Co. of Detroit and the Cole Motor Car Co. of Indianapolis, but these corporations declined to enter the combination.

Mitchell Motors Mentioned

It is understood also that negoiations have been under way with the Mitchell Motors Co., Inc., of Racine, Wis., and the Gardner Motor Car Co., Inc., of St. Louis. Bankers closely connected with the Mitchell company said that they had heard nothing of any plan of entering such a merger. The interests which control the Mitchell company are identical with those back of the Hupp Motor Car Corp., but there has been no intimation that Hupmobile was in any way interested in the merger.

C. O. Miniger, who is president of the Electric Auto Lite Corp., a subsidiary of the Willys Corp., is a director of Jackson Motors, but it was said here that there was not the slightest possibility of Electric Auto Lite being included. So far as the Willys interests were concerned, it was said, the connection of Miniger with Jackson Motors was merely a coincidence.

While it has been known in banking circles for some time that efforts were being made to form a big combination, little has been heard of it in the trade. Probably the most active workers for it have been Harold Plimpton, a Boston broker, who is a member of the Jackson finance committee, and Carl L. V. Exselsen, a Chicago attorney. Exselsen is secretary and treasurer of the Jackson company.

The call sent to creditors of Jackson Motors for the meeting at Jackson, says:

"Very earnest and active work has been done during the past two months preparing a satisfactory solution of Jackson Motors problems. The plans evolved are about to be consummated and the general plan of the entry of Jackson Motors into the company will be disclosed and acted upon."

The creditors had been informed a few days earlier that under this plan Jackson would become a unit of a $50,000,000 automotive merger which would be announced about Oct. 1. The executive committee of bankers and others interested has definitely agreed to pay part of the claims against Jackson in cash, if the plan is approved.

It is understood that the Covert Gear Co. is one of the largest creditors of Jackson Motors, and it has been understood that plans have been under way for a refinancing of the gear company.

Jackson Motors Corp. was incorporated in 1919 to take over the Jackson Motor & Mfg. Co., the United Four Wheel Drive Truck Corp. and the Lampson Truck & Tractor Co. The plant of Jackson covers almost six acres of floor space. It makes a full line of passenger cars and also four-wheel-drive trucks. The authorized capital is $3,000,000 common and $2,000,000 preferred. A general balance sheet of July, 1920, showed assets of $6,212,742 and working capital of $1,259,743.

The Herschell-Spillman Motor Co. has a large plant at North Tonawanda, N. Y., and manufactures two types of engines, one a four-cylinder for automobiles, light trucks and small tractors and the other a six-cylinder for high class automobiles.

The Covert Gear plant is located at Lockport, N. Y., and the company manufactures transmission gears. Alvin A. Gloetzner, the president, is understood to have been prominent in promoting the merger.

The plant of the Traffic Motor Truck Corp. is located in St. Louis.

Willys-Overland About to Change Distribution Plan

New York, Oct. 5—Reports in circulation among wholesale and retail representatives of Willys-Overland, Inc., are to the effect that the company is about to eliminate the distributor from its plan of marketing Willys-Knight and Overland cars. It is said that dealers will operate directly under branch sales managers. Each branch will have several hundred dealers under its direction through this plan. It is reported that sales territory throughout the country will be re-distributed.

It is understood Guy Simon in Detroit and one or two other distributors will be retained. Harry B. Harper, president of Overland Harper Co., Philadelphia, and former president of the National Automobile Dealers' Assn., has turned over his large holdings in Philadelphia to the factory.

Collections Are Good in Strong Automotive Market

Car Production Holds Up and Parts Enjoy Increased September Sales Over August

NEW YORK, Oct. 3—In summarizing conditions in the automobile trade Automotive Industries this week will say:

Business in the automotive field continues surprisingly good, considering the fact that September usually is one of the dullest months in the year. There has been no material curtailment in production in passenger car plants and the truck market is showing signs of life, as is evidenced by the resumption of dividend payments by the Republic Truck Co. Makers of parts and accessories report that their business for September is better than it was for August. This is particularly true of orders for unit parts such as frames and engines. Sales by parts makers in August were slightly better than in July.

Particularly encouraging is the fact that collections are good and that past due accounts gradually are being whittled down. The volume of notes outstanding is steadily decreasing. The finances of the industry rapidly are becoming stabilized. Retail sales of passenger cars in most sections of the country have remained practically stationary for the past three or four months. The natural tendency from now until the first of the year will be downward, but surprising interest is being shown in enclosed models.

There is evident throughout the industry a keen desire to cooperate. This is demonstrated by the decision of the members of the National Automobile Chamber of Commerce to discuss at their annual meeting this week the question of how they can help dealers finance themselves through the winter and what can be done by manufacturers to help solve the used car problem.

The Automobile Underwriters' Conference has accepted the contention of the automotive industry that due recognition has not been given in the past to the "moral hazard" in automobile insurance and that this has been largely responsible for the heavy losses incurred in the past two years.

SOULES KILLED AT FRESNO

Fresno, Cal., Oct. 1.—Alton Soules, who was injured when his car threw a tire and shot through the fence on the Fresno speedway here today in the San Joaquin valley classic race, died at a hospital here shortly after 8 o'clock tonight. His mechanician, Harry Barner who was injured, died later.

Germany's Automobile Show Indicates Full Production

58 Passenger Car Makers Exhibit Products Strictly Up-to-Date; Aluminum Engineering Feature

By W. F. BRADLEY
European Correspondent
Special Cable to MOTOR AGE

BERLIN, Sept. 26—Germany's first post-war automobile show opened Sept. 26 in the specially constructed Kaiserdamm Palace, which is 820 by 230 ft. and located in the northern suburbs of Berlin. It also marked the official opening of Berlin's 12-mile speedway, which belongs to the Manufacturers' Automobile Club. The show is entirely German, and even Austrians are barred.

The exposition contains exhibits by 58 passenger car manufacturers, 34 truck makers, 35 body builders, 40 accessory concerns and 30 machine tools companies. It discloses clearly that the German automotive industry is again established on a full production basis. Because of the low value of the mark, it is prepared to make a serious bid for foreign markets. The attendance is large and foreign buyers plentiful.

With rare exceptions the cars are all up-to-date in design and represent the cumulative experience of the last seven years' attempts to bring production costs down to a minimum. Few German makers are following the American simplified design, as German manufacturers generally prefer a higher grade, rather more costly type.

From an engineering point of view, the feature of the show is the more general use which is being made of aluminum.

Eighty per cent of the cars displayed have four-cylinder engines, 16 per cent six-cylinder, 1 per cent eight-cylinder, and none have 12. Detachable heads are found in 11 per cent of the engines.

Mercedes is using steel cylinders in all models. There is a pronounced tendency toward aluminum steel-lined cylinders, overhead valves, electric lighting and starting in most of the models. Ninety per cent of the cars are Bosch equipped.

The unit power plant construction is seen in 21 per cent of the engines; separate transmission in 78 per cent; four-speed transmission in 83 per cent; spiral bevel drives in 39 per cent, and straight bevels in 59 per cent.

Straight side tires are unknown on passenger cars, but giant straights have made their appearance on many trucks. It is declared here that the Continental Caoutchouc and Gutta Percha Co. has come under control of the B. F. Goodrich Co.

There also are reports that the Packard Motor Car Co. has purchased a factory in Poland, and that Ford has obtained control of the Hansa-Lloyd Automobile Co. in Bremen.

Maybach, the former co-worker of Daimler and noted as an airship manufacturer, has produced a car without clutch and gear box and with an electric motor sufficiently powerful to drive the car at low speeds, but with an emergency gear. The engine is a six-cylinder, closely resembling the Dutch Spyker engine which is manufactured by Maybach. The rear axle is of aluminum and the car has front wheel brakes.

Rumpler, the aircraft manufacturer, has produced a passenger car with scientific stream lining. The chassis is in the form of a forged steel hull. It is powered with a six-cylinder all-aluminum W type engine. It is designed for gear driving with the rear wheels without universals. All the mechanism, including cantilever springs, is inside the hull.

Stinnes is showing a low-priced cheap production car with a four-cylinder all-aluminum overhead valve engine.

Cooperation Plan to Solve Dealers' Used Car Problem

New York, Oct. 1—The Automobile Dealers' Assn., Inc., at a meeting which was in the nature of a roll call of all members, last week authorized an investigation of the possibilities of cooperative action in handling used cars. The secretary, Thomas F. Moore, was instructed to investigate plans for cooperative appraisal and exchange information on used cars, operative in Syracuse and Chicago.

The decision followed an address by Secretary Moore, in which he emphasized the extreme necessity for automobile dealers to get together on the larger and common problems of the trade instead of trying to work out their destinies along strictly and sometimes harmfully competitive lines.

SAXON LOWERS PRICES

Detroit, Oct. 1—The following price reductions are announced by the Saxon Motor Car Corp.:

	Old	New
Two-passenger roadster	$1,545	$1,345
Five-passenger touring	1,495	1,295
Coupe	2,295	1,995
Sedan	2,295	1,995

JACKSON CARS REDUCED

Jackson, Mich., Oct. 1—The Jackson Motors Corp. has made the following reductions:

	Old	New
Four-passenger touring	$2,685	$2,285
Five-passenger touring	1,950	1,635
Coupe	3,750	2,985
Sedan	3,750	2,895

HUPMOBILE LOWERS PRICES

Detroit, Oct. 1—Hupmobile Motor Car Corp. has reduced prices on its enclosed car models to $2250 and $2200 for the sedan and coupe, respectively. The former prices were $2485 and $2400. No changes are made in the models.

TULSA ROADSTER LOWERS PRICE

Tulsa, Okla., Oct. 1—The Witt-Thompson Motor Co. has reduced prices on the Tulsa roadster and five-passenger touring car, Model E 1-3 from $1285 to $1175.

Exhibitors In 1922 Salons More Than Double 1921 List

Commodore to House New York Show Nov. 27 to Dec. 3; Drake in Chicago Jan. 28 to Feb. 3

CHICAGO, Sept. 26—Preliminary announcement of the forthcoming Automobile Salon discloses the fact that space has already been taken for a larger number of motor cars than were seen at any previous session of this notable exhibition, and that the 23 different makes of high grade cars and 10 custom body builders now entered are more than twice the number ever before in hand at this early date. The Automobile Salon will be held at the Commodore, New York, from Nov. 27 to Dec. 3 next, and at the Drake, Chicago, coincident with the National Automobile Show January 28 to Feb. 3.

Cars already entered for the Automobile Salon are the following: Brewster, Cunningham, Daniels, Delage, Dorris, Duesenberg, Fergus, Fiat, Lafayette, Lancia, Lincoln, Locomobile, MacFarlane, Mercedes, Minerva, Packard, Panhard, Pierce-Arrow, Renault, Rolls Royce, Stevens Duryea, Sunbeam and Winton. Space for custom coachwork exhibits has been taken by Brewster, Brooks-Ostruk, Fleetwood, Healey, Holbrook, Locke, New Haven Carriage Co., Smith-Springfield, United Body, and the Walter M. Murphy Co. There will be no separate exhibits of tires or accessories, but all automotive products appropriate for motor cars de luxe and custom bodies will be found on the various complete cars shown.

Fifteen of the cars to be exhibited are of American manufacture. The others represent England, France, Italy and Germany. The German-made Mercedes appears at the salon for the first time since 1914. Five of the American cars will make their salon debut next November.

Thomas Makes New World's Record in Small Car Class

Paris, Oct. 1—An average speed of 72 miles an hour was made by Rene Thomas, driving a Talbot-Darracq, in winning the race at LeMans for cars equipped with engines not exceeding 91 cu. in. piston displacement. This speed established a new world's record for cars of that class. Guinness was second in the race and Segrave third, both driving Talbot-Darracqs.

The race for cycle cars with engines of 67 cu. in. piston displacement was won by Lombard with a four-cylinder Salmson, who averaged 54.7 miles.

R. & V. KNIGHT ADJUSTS PRICES

East Moline, Ill., Oct. 1—Reductions have been made on the R. & V. Knight, Model R, as follows:

	Old	New
Five-passenger	$2,150	$1,500
Coupe	2,850	2,650
Sedan	2,950	2,750

Standard Parts Asks Court Order to Pay $1,000,000

Payment Represents Additional 10 Per Cent of Total Amount Due Creditors

CLEVELAND, Oct. 4—The Standard Parts Co. has, through Receiver Frank A. Scott, applied to the United States district court here for authority to pay the creditors another 10 per cent dividend on their claims. This $20,000,000 corporation, which is engaged in making automobile parts and accessories, has been in the hands of receivers for more than a year, and the application by Scott was not only welcomed by the thousands of local stockholders who months ago stood to lose their entire investment, but was received in the financial district as another distinct step toward ending the receivership.

If Federal Judge D. C. Westenhaver passes favorably on the application, the company will distribute to creditors $1,000,000. Approximately 60 days ago, Receiver Scott distributed another million dollars, so that in two months the company has paid on its claims $2,000,000. After paying these two millions of dollars a factory executive in charge of operations for the receiver announced the company would have left in the treasury ample working capital.

A hearing on the application to pay will be held on October 15. Undisputed claims against Standard Parts aggregate $9,197,000, while there were contingent liabilities of $1,250,000. These, the application states, have been reduced through adjustments by $510.000 and the receiver believes they will be reduced further. As a result, the total claims against the company are placed at approximately $9,500,000.

There is good news for the smaller creditors of the company in the application, for the court is asked for permission to pay in full all claims not exceeding $100. There are 748 such claims and they aggregate $22,619.

Creditors some time ago proposed a plan whereby they would take over the plant, and at the hearing on the initial application for authority to distribute a 10 per cent dividend, a determined effort was made to have the plan adopted, but it failed. The favorable showing made by the receiver is expected to end all efforts on the part of creditors to take over the plant, especially as stockholders insist that the plan is harsh on them.

The new application is generally accepted in the industry here as meaning that the Standard Parts is again a permanent source of supply and that it is gradually working itself out of the receivership.

ST. LOUIS SHOW OPENS OCT. 15

St. Louis, Oct. 3—The St. Louis Fall Automobile Exposition which will be held in the Chevrolet Building, formerly General Motors Building, from Oct. 15 to 22, inclusive, will occupy four acres of floor space, and the aisles 12 feet wide have been so arranged that three miles of new passenger cars, trucks, accessories and certified renewed cars will be on display.

This will not be the regular annual Automobile Show. It is given at this time of the year because of the numerous changes in price, models, body lines and mechanical construction, of nearly all makes of cars since the regular show last February, and because the large Chevrolet Building is available.

The show will be in charge of the St. Louis Automobile Manufacturers' and Dealers' Assn. The manager of the show will be Robert Lee, secretary and general manager of the dealers' association.

The members of the show committee in active charge of the arrangements are Chairman H. W. Spalding, manager of the Chevrolet Motor Co.; P. S. Russell, manager of the Packard Motor Car Co. of Mo.; George Weber, president of the Weber Implement and Auto Co.; J. H. Mack, manager of Autocar Sales and Service Co. of Mo.; G. G. Giese, president of the Alastic Tire Cushion Co., and R. C. Frampton, president of the Hudson Frampton Motor Car Co., and of the dealers' association.

REPUBLIC RESUMES DIVIDENDS

New York, Oct. 5—Dividend payments on the preferred stock of the Republic Motor Truck Corp., which is controlled by John N. Willys, have been resumed. The quarterly payment due July 1, was passed. The current dividend of 1¾ per cent is payable Oct. 1. Shipments from the Republic factory this month will aggregate 200 trucks, and sales next month are expected to exceed this total. This is regarded as indicating a much better trend in the truck market.

BUCKEYES PREPARE FOR MEET

Columbus, O., Oct. 4—The Columbus Automobile Trade Assn., which will be host at the annual convention of the Ohio Automobile Trade Assn., to be held in this city the second week in December, has started arrangements for the big meeting. One of the important features of the convention will be a display of equipment and supplies for the service plant.

VICTOR RUBBER EARNINGS

Springfield, O., Oct. 1—President H. S. Berlin, of the Victor Rubber Co., announced that the company during the months of July and August earned a profit of $62,030 and in addition set aside $36,781 as a reserve for unanticipated contingencies. The company has doubled its sales agencies and is preparing for an extensive sales program in 1922.

BEGGS MAKES REDUCTION

Kansas City, Oct. 1—The Beggs Motor Car Co. has made the following reductions on its models:

	Old Price	New Price
5-Passenger	$1775	$1520
Coupe	2675	2320
Sedan	2775	2420

Briscoe Reorganizes with $5,000,000 of New Capital

Cars and Company to Be Renamed After Clarence A. Earl, President of Organization

CHICAGO, Oct. 3—Briscoe Motor Corp. and the Briscoe car will be supplanted in the automotive field by Earl Motors, Inc., and the Earl car, both the company and the car being named for Clarence A. Earl, former first vice-president of Willys Overland, who became president of Briscoe last March. It is said $5,000,000 in additional capital will be put into the business, arrangements for handling the finances having been perfected by Earl with Chicago bankers during September.

In announcing the reorganization, Earl said the Briscoe directors had voted unanimously for the introduction of the new capital, necessitated through the fact that the distribution end of the business had been expanded by the addition of 20 new distributors and 240 dealers in the past six months. Both the new financing and the new policies will come before the stockholders' meeting of Oct. 20 for final ratification.

Enclosed models of the Earl car, which will reflect a general improvement in the former Briscoe line, will be ready for delivery Oct. 15. Open models will be ready Nov. 1. For the present, Briscoe cars are being produced, though most divisions of the factory are busy on producing parts for the new car.

Discussing the outlook for business, Earl said: "The action our board of directors has taken is really our first step toward expansion to meet a demand which we are certain will develop by the first of next year. The minimum capacity of our plants today is 15,000 cars annually. With general business conditions pointing to a strong revival of activity inside the next 90 days, we are laying plans to double our minimum and we are confident we will have all the business we can possibly handle in 1922, and more."

The Briscoe Motor Corp. was incorporated in January, 1916, to take over the Briscoe Motor Co., which was organized in 1913, and several other automobile and accessory concerns. The corporation has outstanding $1,500,000 preferred 7 per cent cumulative stock, and 150,000 shares of common stock of no par value. Dividends have not been paid on the common.

Last March the directors voted to offer 100,000 shares of new common stock to the shareholders at $20 a share. The current market price of the stock is around $11 a share.

REDUCES SPEED TRUCK PRICE

Lima, Ohio., Oct. 1—The Gramm-Bernstein Motor Truck Co. has today reduced the sales price of the Model 10 Gramm-Bernstein Pioneer Speed Truck from $1,495 to $1,365.

Motor Truck Mfgs.' Assn. Closes Its Chicago Office

Dull State of Industry and Lack of Financial Support Reasons for Dissolution

CHICAGO, Sept. 30—At a meeting of the Board of Directors of the Motor Truck Mfgs. Assn. held in this city Sept. 15, it was decided to close the association offices and to dispense with the services of a manager and staff. At the suggestion of B. A. Gramm, vice president of the Gramm-Bernstein Motor Truck Co., association member, it was decided to continue the activities of the organization through the medium of occasional meetings of such members as may remain in the organization.

The reasons given for the closing of headquarters and the virtual dissolution of the association are the present state of the motor truck industry, which did not justify the expense of maintaining office and staff, and the lack of financial support of the association from its members.

The Motor Truck Mfgs. Assn. was organized in April, 1919, for the purpose of ready exchange of parts among manufacturers under contract with the government to build Army Type B trucks. Later the activities of the organization were broadened to cover such points as legislation and general expansion of the industry. The association started with 14 members. This number was raised to 35, but had dropped to 31 at the time of dissolution. David Thomas has been manager of the association since its organization.

A. E. R. A. GROWS RAPIDLY

San Francisco, Oct. 1—The Automotive Equipment Representatives' Assn., with headquarters in this city, has made substantial progress since its organization a short time ago. Manufacturers' agents on the Pacific coast are eligible to membership. One of the main purposes of the organization is to see that sales are made exclusively to jobbers. W. S. Greenfield is president, A. E. Mohrig, vice president, J. H. Collins, treasurer, and A. D'Ettel, executive secretary.

E. W. BROOKS DIES

Detroit, Sept. 30—E. W. Brooks, southwestern field representative of the Acme Motor Truck Co., Cadillac, Mich., died suddenly in Kansas City, Sept. 19, his funeral being held in Oklahoma City during the week. The company was officially represented at the funeral by C. J. Helm, sales manager. Mr. Brooks was widely known as a field representative in the industry, with a splendid record of accomplishment.

BONUSES SPUR SALES

Philadelphia, Oct. 5—Trucks, particularly those of the smaller capacities and lighter construction, are having a better sale than for some time in this city and vicinity, but only under the constant spur of salesmen's contests in which prizes or bonuses figure, and through readjustment of territory and increased energy on the part of sales managers.

Sales of lower priced automobiles are picking up, and while business is not yet on a normal basis, buying is more systematic and inquiries are more frequent. Many of the dealers are still engaged in cutting down their sales and service operating expenses. One economical step that is becoming general, is the drastic cutting-down of the number of salesmen's cars and demonstration cars.

Louisville Enclosed Car Week An Invitation Affair

Louisville, Ky., Oct. 5—Between 20 and 25 automobile dealers of the city are expected to take part in the Enclosed Car Week demonstration being arranged by the Louisville Automobile Dealers' Assn. for the week of Oct. 15 to 20. Exhibits will all be in individual showrooms.

The association office reports that 18 dealers have signed, with five or six others favoring the project but waiting for assurance from their factories that the necessary number of enclosed models can be sent here by that time.

An extensive advertising campaign has been planned, in which the dealers participating will spend jointly several thousand dollars. This does not include appropriations of the various firms on individual advertising. The joint advertising, which will aim simply at calling attention to the idea of the enclosed car without any mention or illustrations of a particular make of automobile, will begin two weeks prior to the opening of the campaign and continue for 20 days.

Some of the dealers are planning to stage their demonstrations at specially appointed intervals, with invitations issued to a limited number of guests who will be afforded ample opportunity to inspect the various models on exhibition in the showroom. Seats will be provided and refreshments served. At one establishment the models will be brought on the floor, one at a time, with a spotlight playing upon them as they emerge from between heavy curtains. The guests will be invited to seats, while a member of the firm calls attention to the points of merit about the car being displayed.

MAKE 118,100 FORDS IN AUGUST

Detroit, Oct. 1—The largest single shipment of Ford motor cars to Mexico was made by the Houston branch on July 26, when 340 cars were shipped to Cia Importadora del Auto Universal, S. A., Mexico City.

Foreign automobile conditions are reported brighter by the Ford company. All foreign plants had an output of 6140 for August. At Buenos Aires, production made the most important increase that it has for some time.

Ford Motor Co. of Canada turned out 2773 cars and trucks. Production in all plants, domestic and foreign, totaled 118,100 for August.

Rickenbacher Company in Detroit Four Plant Deal

Buys Disteel Wheel Factory and Promises 12,000 Cars in 1922 As Result of Purchase

DETROIT, Oct. 3—Rickenbacker Motor Car Co. has taken over the Disteel Wheel Plant of the Detroit Pressed Steel Co., in a deal which affects four companies in the industry. It is one of the first of a number of plant changes which may be expected this fall and winter, all making toward the solidification of the companies concerned.

Besides Rickenbacker and Detroit Pressed Steel, the companies in the present deal are Briggs Mfg. Co., body builders, and Everitt Bros., body painting and trimming. Everitt Bros. will consolidate its business in its East Jefferson avenue plant, while Briggs Bros. will virtually double the space occupied in its former plants.

The deal has been under way for several months, according to President B. F. Everitt of Rickenbacker, directing the negotiations. Early in August Rickenbacker took over the Harper avenue plant of Everitt Bros. for a consideration of $2,000,000. This plant is now sold by Rickenbacker to Briggs Bros. and the Disteel plant purchased. President Everitt said Rickenbacker Motors has cleared from $350,000 to $400,000 on the deal.

In taking over Disteel Wheel as the manufacturing site of Rickenbacker, Everitt said the company has increased its production capacity and will build 12,000 cars in 1922. The Disteel plant is thoroughly modern, having been built one year before the war for Springfield Metal Body Co., which later went into receivership. It was occupied by Detroit Shell Co. during the war and was sold later to Detroit Steel Products.

The plant has now been sold to permit Detroit Steel Products to consolidate its manufacturing units in the Mt. Elliott avenue plant. The company has much unoccupied ground at this plant and should the existing buildings prove inadequate for its manufacturing needs it will add to them.

Everitt declares the Disteel plant ideal for Rickenbacker Motor's needs. In it, he declared today, every part to go into the car will be manufactured. It will be a factory-built proposition entirely, he said, every unit having been designed especially for the Rickenbacker car and being made on the grounds. Factory equipment is now being made up from metal patterns prepared as the experimental work progressed.

Each of the companies involved in the deal are already in the new plants. All of the Rickenbacker offices are now at the former Disteel plant. President Everitt said that production will be under way on all models in December, though no shipments will be attempted until January.

Sway of Unsettled Prices Moves Dealers' Used Cars

Uncertain Conditions Alone Are Responsible for Bearing Automobile Market in Northern California

SACRAMENTO, Oct. 1—While it is not to be denied that the automobile business is not as brisk as it was a few weeks ago, there are reassuring indications of better conditions ahead. There is no dearth of prospects—inquiries are more numerous than in many months, in fact. But there remains the steadfast belief that the price of motor cars is unsettled, and it is that reason alone that is bearing the market in northern California.

There is a bright spot in the present situation, however. The used car market is looking up, most decidedly. Many who believe the flurry in prices will be succeeded by more pronounced breaks, have purchased used cars in the belief they can get their money out in trade-ins under the new prices they expect to see. Hence, while the market is not what dealers would like, it is not as gloomy as they feared when the price breaks continued.

Rich harvests virtually are assured in California, save in the rice fields. It was in rice that many farmers met their financial defeat last year, and the almost assured crop this year has had its effect on the market already. As one dealer sums it up:

"Let the prices settle for two months, let the raisins and other fruit dry successfuly and the rice crop come in before the raisins, and we'll have the biggest business we have known, war time not excepted."

TO EXAMINE FLYERS

Sacramento, Oct. 1—The Aircraft Examination Board, provided by the legislature last winter, has been formed by Charles J. Chenu, superintendent of the motor vehicle department, in whose hands the administration of the act providing the board, was placed. This board is to examine and report upon the qualifications of aviators who desire licenses. The examination fee is $25, the operator's license costs $2, and license plates are furnished for $5.

CROWDS AT GEORGIA TECH

Atlanta, Oct. 1—So large has been the number of applications for admission to the automobile mechanics' classes at the School of Applied Sciences, Georgia School of Technology, Atlanta, that it is announced by A. B. Morton, dean of the school, that many applications will have to be turned down because the shops have the capacity for only a limited number of students.

MORE GAS, MORE MEN, MORE PEP

Hartford, Conn., Oct. 4.—The answer of the Colonial Automobile Co., Hartford, Conn., to the so-called business depression is to renew effort and put on more salesmen. When William M. Turnbull, general manager of the agency, was asked what he had done to cut down expenses during the past year, he replied:

"Nothing; we are making no attempt to effect minor economies. If a salesman thinks he must have more gallons of gas to make a few demonstrations, why, he gets it—that's all. We haven't been throwing money away, but we have spent some to make more. We have put on two extra salesmen and things look good."

This is the more significant for the reason the concern works in a very restricted territory, the city of Hartford and the town of Manchester. The agency has gone after the business and has gotten it. Two hundred and fifty cars have been sold this season and of these 200 were sold in the first six months. "It makes me laugh," says Turnbull, "the way some of these dealers feel blue. We do not have time to feel blue."

12,825 Smiths Produce 126,500 Car Prospects

DETROIT, Sept. 26—Eleven and five-tenths per cent of the Smiths are buying automobiles this fall and winter.

This information was solicited by a leading farm journal by sending out a questionnaire to the 12,824 Smiths listed among its 1,100,000 subscribers. The idea of this means of getting a line on what farmers were going to do with their money suggested itself to a man named Smith in this journal's research department.

By applying the percentage of Smith car buyers to its total subscription list, the journal estimated that 126,500 cars will be purchased by its 1,100,000 readers. Of this number the questionnaire revealed that 116,200 had already determined upon the make of car they will purchase.

Wilcox Wins From Murphy in 97.5 Mile Per Hour Race

Indianapolis, Oct. 1—"Howdy" Wilcox nosed out Jimmy Murphy in the last lap in the 50-mile invitational race held at the Indianapolis Motor Speedway, Sept. 1, for the entertainment of the delegates to the American Society for Steel Treating.

Jimmy Murphy, winner of the French Grand Prix, just naturally wanted to win. He set the pace from the start, and it was "some" pace at that, but Wilcox with his more powerful Peugot hung right to Murphy's heels. In the final lap, when Murphy's Deusenberg suddenly developed internal disorders, victory was snatched from Jimmy as Wilcox flashed over the finish a winner, in the time of 30 minutes and 50:64 seconds for the 50 miles, an average of 97.7 miles per hour.

In the tenth lap of the race Bennie Hill and his mechanician, in a Frontenac, had remarkable escapes from death when their car was wrecked.

Current New England Sales Fill Dealers With Optimism

Automobiles by Train Loads Fail to Supply Demands; Accessory and Tire Business Good

BOSTON, Oct. 4—Business in general seems to be picking up in Massachusetts and motor dealers are looking to the future with more cheerfulness than for some time.

J. M. Linscott, Reo distributor for New England, has just ordered his third trainload shipment within two months. Counting the cars and light trucks in these shipments, and those coming between, there were 617 vehicles sent to him since July 25.

J. H. Brough, who came here recently from Chicago to take over the R & V Knight, changing it from an agency to a branch, says that cars are not coming from the factory fast enough for him.

C. S. Henshaw, Dodge Brothers, says that he is well ahead of his quota, and that his sales this year are far ahead of 1920, a big year.

J. S. Donovan, Studebaker, smiles when he is asked about business, and generally points to the people in his salesrooms.

J. W. Maguire booked 11 orders for Pierce-Arrows in one week recently, most of them for enclosed models.

Frank E. Wing, Marmon, has had a very good summer season.

C. P. Rockwell, Nash, says that he is doing well.

Frank Allen, who has the Wills Saint Claire, says that more than 50 of them have been sold in Boston since the car appeared here at show time.

A. L. Danforth, Cadillac; G. B. Kimball, Hudson-Essex; John L. Snow, Peerless; Amos J. Shorey, Velie; Charles P. Fay, Maxwell-Chalmers; John L. Johnson, Buick; J. H. MacAlman, Stearns Knight; J. W. Bowman, Daniels Eight; A. H. Sowers, Lexington; Connell & McKone, Willys Overland; F. A. Hinchcliffe, Jordan; W. C. Sills, Chevrolet; W. H. Gleason, Dort; George Leghorn, Gardner-Liberty; Otis C. Funderburk, Lincoln; Harry Dunn, Oldsmobile; L. B. Sanders, Oakland, all say that while business has not been phenomenal, that it has not been so disappointing as to make them fear for the future.

The accessory dealers all report having had a good summer, and the tire men say that business is good.

OHIO FARMERS FEELING MARKET

Columbus, O., Oct. 5.—An increased demand for passenger cars, especially those ranging in price between $800 and $2200 is reported by dealers in central Ohio. While a large majority of the sales are for the cities, there is an improvement noted in the demand from agricultural districts. This demand is not very large as yet, but there is a decided betterment in the feeling among the farmers.

Reduce Insurance Policies 50 Per Cent in Most Cases

National Automobile Underwriters to Continue Old Contracts, but Will Follow New Rules

NEW YORK, Oct. 3—A general reduction in the size of automobile insurance policies, in most cases amounting to 50 per cent, was announced at the annual conference of the National Automobile Underwriters, held at the Commodore Hotel here. It was explained that while policies issued last year would be continued, underwriters throughout the country were more cautious in renewing or issuing policies.

Several speakers spoke of policies issued a year ago as a "potential moral hazard," declaring that an unscrupulous automobile owner can risk the loss of his car under last year's policy, knowing that he can recover more than the present sale price for it on his policy.

It was the consensus among those present that last year was unusual in the automobile insurance business because of the violent changes which took place and the resulting experiences of the companies, but the belief was expressed that the worst had been passed and that, with new restrictions imposed on automobile owners by legislation in many states, there would be a continued improvement.

Some of those who addressed the gathering declared that the business could be stabilized through compelling policy holders to take greater interest in their cars, and a lengthy discussion ensued on a means to bring this about.

It was pointed out that owners were negligent in the care of appurtenances on their cars, and that not infrequently when filing claims for losses of the kind, they asserted the part was recently purchased, when it had been in use for some time and had deteriorated in value.

W. B. Burpee, secretary of the New Hampshire Insurance Co. of Manchester, N. H., was elected president of the conference to succeed George Bulkley of the Springfield Fire & Marine Insurance Co. of Springfield, Mass. John Marshall, Jr., of the Fireman's Fund Insurance Co. of San Francisco was elected vice president, and F. W. Day was elected treasurer.

G. M. C. HEADS MEET BI-WEEKLY

Detroit, Oct. 1—To bring the units of the General Motors Corp. into the closest possible contact on general policies, meetings of the executive committee will be held twice monthly at the big G. M. C. building here, with either President Pierre S. du Pont or one of the executive vice presidents, presiding.

The operations committee of the corporation, which comprises the manufacturing executives of all units and the executive officers of the corporation, will meet monthly. Complete details of operations, sales and general policies of the many units have been definitely worked out at the meetings held to this time and are being made effective at once.

N. A. C. C. Conference to Be Given to Dealer Problems

Used Car Situation and Winter Stock of Cars Are Questions Taken Up for Discussion

NEW YORK, Oct. 3—The National Automobile Chamber of Commerce members meeting at headquarters here Oct. 6 will be one of the most important meetings ever held by that organization from the viewpoint of dealers. It has been decided to eliminate from the discussion such subjects as taxation and highways, important as they are, and get down to topics which are vital to the industry.

The first question which will be taken up will be, "How can manufacturers help dealers to carry cars next winter?" In the discussion various plans for financing dealers so that they can carry stocks and keep factories in production will be outlined. There will be no formal address, but discussion leaders have been appointed to open the debate.

The second important problem to be taken up will be, "What can be done by manufacturers to help solve the used car problem?" Manufacturers realize as keenly as dealers that some satisfactory solution must be found for this question before the industry can be thoroughly stabilized.

At the luncheon which will follow the morning meeting of the members, Magnus Alexander of the National Industrial Conference Board will discuss the economic and industrial situation.

Executive Committee Heads General Motors Corporation

Lower row: Lawrence P. Fisher and Fred J. Fisher, Fisher Body Co.; G. W. McLaughlin, General Motors of Canada; I. J. Group, Oshawa, Ontario; K. W. Simmerschied, Chevrolet Motor Co.; A. P. Sloan, Jr., vice president; P. S. du Pont, president; J. J. Raskob, vice president; C. S. Mott, chief of advisory staff, General Motors Corp.; H. H. Rice, president, Cadillac Motor Car Co.; J. A. Craig, Samson Tractor Co., Janesville, Wis.; J. H. Newmark, advisory staff.

Middle row: J. H. Beaton, McLaughlin Motor Co.; Ross MacKinnon, General Motors Co. of Canada; J. W. Wheeler, General Motors Export Co.; C. J. Nephler, Oakland Motor Car Co.; H. M. Craig, Samson Tractor Co.; E. M. Young, advisory staff; Norval A. Hawkins, director of sales, advertising and service, advisory staff; L. McNaughton, Cadillac Motor Car Co.; H. T. Hickory, advisory staff; V. H. Day, General Motors Truck Co., Pontiac; L. R. Beardslee, New York office; H. G. Weaver, advisory staff.

Top row: R. B. Kayser, Chevrolet Motor Co.; A. L. Deane, General Motors Acceptance Corp.; L. D. Haas, Scripps-Booth Corp.; J. T. Ardis, New York office; T. S. Merrill, secretary, General Motors Corp.; C. E. McTavish, General Motors of Canada; E. T. Strong, Buick Motor Co., Flint; G. H. Peasley, Olds Motor Works, Lansing; R. D. Kerby, Olds Motor Works of Canada; J. H. Voorhees and F. G. Eastman, advisory staff.

Milwaukee Dealers Start New Educational Campaign

Trade Association As Unit Offers Sales and Service Instruction to 700 Workers

MILWAUKEE, Oct. 3—The Milwaukee Automotive Dealers' Assn. has just gone on record with another accomplishment in the endeavor to improve the merchandising and maintenance policies of its entire membership. The association brought to Milwaukee at its expense, Percy E. Chamberlain, of Denver, who for the last year has been traveling over the country with his message on better selling and service. Chamberlain delivered a series of four lectures before a group of nearly 700, consisting of members of the association and their employes, from service managers down to the shop apprentice. The accompanying photograph was taken while one of the meetings was in session.

The lectures were given on the evenings of Sept. 26, 27, 28 and 29. A number of women connected with local sales and service establishments were interested auditors at each lecture.

This is the first time that an association of dealers has directly engaged Chamberlain's services in this way. His appearances within the last year, which have been recounted in MOTOR AGE and Motor World from time to time, together with reviews of his lectures, usually have been under individual auspices or those of a group of dealers.

It was nearly a year ago that Chamberlain made his first visit to Milwaukee as the missionary of better selling and better service, and at that time he addressed a special meeting of members of the Milwaukee association at the Milwaukee Athletic club. It was the result of this session that the association now decided to bring Chamberlain back to Milwaukee and to give employes of members the opportunity to hear his message.

Admission to the lectures was free, the association having extended an invitation of broad scope to any person in the city interested in the matter. The series was well advertised through the columns of the local newspapers and many personal letters were sent from the offices of the association to call the particular attention of dealers and others to the desirability of hearing Mr. Chamberlain.

Officers and members of the association express themselves as well pleased with the results and consider it one of the best investments the organization has made for the good of the organization as a whole.

Ford Schedule Planned to Reduce Surplus Parts Stock

Detroit, Oct. 3—In the face of steadily increasing business since the price reduction of Sept. 2, Ford Motor Co. has adopted a manufacturing schedule which will work off all surplus parts accumulated in the many assembly plants of the company before the winter months set in.

For the second successive Saturday the Highland Park plant, in which all the parts are manufactured, was closed down. The company production officers deny that a five-day weekly working schedule has been determined upon, but only that this half day closing is to bring about an equalization of stock.

In addition to the half-day closing, however, employees in many departments are now working on alternate week shifts and have been notified that this arrangement would be continued for the present. Practically every department in the factory is affected by this alternate work week plan.

From the company's statement that working arrangements of this kind have been made for equalization of stocks, it is evident that considerable surplus has been accumulated in the rush of summer manufacturing, and that the company does not intend to carry this inventory over the winter. There is every indication, however, that operations will be continued on an ample scale for the balance of the year.

GOODRICH DENIES CONTROL

Akron, Oct. 4—W. C. Arthur, manager of the International B. F. Goodrich Corp. which controls the foreign holdings of the Goodrich company, denies that it has acquired or contemplates acquisition of the Continental company as reported in Paris.

Dealers Crowd Milwaukee Meeting

Seven hundred automotive workers attend educational lectures under auspices of Milwaukee Dealers' Association

Illinois "Blue Sky" Halts Durant Motors Stock Sale

New Car Is in Production at Long Island City Plant at Rate Fifty Per Day

NEW YORK, Oct. 1—Durant Motors, Inc., has been informed by the Illinois Securities Commission that it will not be permitted to sell stock in that state on the ground that its securities are "purely promotional and without basis of value." A statement issued by Carroll Downs, vice president of Durant Motors, states that the attorneys for the corporation advised several months ago that under the Illinois law as it then stood, any stock which was listed on the larger stock exchanges of the country was eligible for sale in Illinois. Sale of Durant stock then began, but the Illinois law was amended so that admission of the other stock exchanges did not make securities eligible in that state. When this amendment was called to the attention of the company, sale of the stock was suspended.

Production to Be Increased

The Durant Four is in production at the Long Island City plant, and the scheduled output for next week is between 50 and 60 cars a day. Production will be steadily increased. The automatic machinery has been placed and the company contends that a record has been made in getting an entirely new car into production in seven months. Production in the Lansing plant will begin about Nov. 1. The output for the year at the Long Island City plant will be between 4,000 and 5,000 cars.

KENNERDELL OUT OF A. A. A.

New York, Oct. 3—Richard Kennerdell, Franklin, Pa., who for eight years has served as chairman of the Contest Board of the American Automobile Assn., has placed his resignation in the hands of President George Diehl, to take effect immediately.

Chairman Kennerdell has during his eight years been a strong supporter of clean motor contests, and his resignation at this time, due to differences of opinion with President Diehl, is a matter of regret. Former chairman, Wm. Schimpf, of Brooklyn, N. Y., who preceded Kennerdell, has temporarily assumed the chairmanship.

BATCHELDER IS BURIED

New York, Oct. 1—The late Amos G. Batchelder, former executive chairman of the American Automobile Assn., who was killed in an aeroplane accident May 28, was buried Sept. 30 at his old home at Attica, N. Y. The body was taken from the receiving vault at Forest Lawn cemetery, Buffalo, and carried over the new Batchelder Highway to Attica, where funeral services were held in the Masonic Temple.

BUSINESS NOTES

Portland, Ore., branch of the Hartford Windshield Sales Co., Los Angeles, has been opened in Portland. The company deals entirely in windshields and glass fixtures for automobiles.

All-American Truck Co. factory site and buildings were not sold at auction Sept. 27, as advertised. A second mortgage for $50,000 controls the situation and the real estate will go to the holder of this claim. This is the third time this company has been in receivership and this settlement of the concern's affairs is said to mark the end.

Purple Truck Garage Co., Tacoma, Wash., capital stock $50,000, has been incorporated by C. P. Richards, A. Milne and R. W. Price.

Eagle Motor Truck Corp., St. Louis, which has just completed a large addition to its factory plant, dedicated the new building Friday evening. Talks were made by T. R. Avers, president, J. P. Reis, vice-president and general manager, J. W. Hay, treasurer of the Eagle Motor Truck Corp., and Adolph Miller, Jr., salesmanager of the American Body and Cab Mfg. Co., which builds the cabs and most of the bodies for Eagle trucks.

Philadelphia Spring Works is manufacturing a spring with a groove forged in it, which enables the oil to lubricate the entire spring, doing away with the disagreeable work of taking the spring down, or slopping oil over the outside of it.

Gray-Dort Motors, Ltd., Chatham, Ont., announces the appointment of W. T. Bush as director of sales to succeed W. G. Bell, who has taken up other work in the organization. Prior to his appointment with the Gray-Dort Co., Bush held an important executive position with the Packard Motor Car Co., Detroit. Bush said that he has returned to the Canadian field because he believes that Canada offers a greater market for the sale of automobiles than any other country in the world.

Directors of National Motor Show of western Ontario to be held in London, Ont., in January next have appointed T. C. Kirby as show manager for this big event. An extra large building with a floor space of 150,000 sq. ft., has been rented for the commercial car and accessory sections of the exhibition and the large armories will be used exclusively for passenger car exhibits.

Harry T. Hanover, president and general manager of Apex Motors Corp., Ypsilanti, builder of the Ace car, and connected also with the Guy Motor Corp., was a visitor in Seattle to attend a series of meetings where reorganization of the Davis Car Co. was discussed and perfected. This concern this month began quantity production of Totem trucks in a fully equipped factory. J. M. Finley is president of the company.

John M. Neskov, who has been associated with automobile merchandising in St. Louis, has begun the manufacture of a passenger car which will be known as Saint Louis.

Ford interests are starting work on a large body shop at Iron Mountain, Mich., as the second principal unit of an enormous woodworking operation established in the heart of the upper Michigan forest and mining district.

Electric Welding & Mfg. Co., Milwaukee, has recently changed its corporate style to Welded Products Mfg. Co., to better designate the nature of its business. George F. Luehring is secretary of the company.

Thor Rosten, Madison, Wis., manufacturer of tools, dies, jigs, fixtures, etc., has broken ground for a new and larger shop to cost about $25,000 equipped.

Perfection Hoist & Engine Co., Milwaukee, is moving its plant and headquarters to Two Rivers, Wis.

Gabriel Mfg. Co., Cleveland, manufacturer of Gabriel snubbers, held a convention for its 50 distributors Oct. 3. A golf tournament and dinner followed the business session.

J. T. Joyce, Eau Claire, Wis., has been appointed trustee of the bankrupt estate of the United States Auto Gear Shift Co., of the same city, which recently filed a voluntary petition, scheduling liabilities at $278,424 and assets at $749,258. Creditors will meet Oct. 1.

Victor Krefl Mfg. Co., Two Rivers, Wis., which was incorporated last spring with $50,000 capital, and which has decided to transfer its plant and offices to Eagle River, Wis., has been reincorporated as the V. Krefl Co. of Eagle River, with a capital stock of $75,000. It manufactures shock absorbers, spotlights and other automotive equipment. The principals are Victor Krefl, Ben Sohr and Edward Hammes.

J. F. Fulton announces that the plant of the American Window Glass Co., Anderson, Ind., has been purchased and will be used by the Fulton Tractor Co., a new organization manufacturing a tractor invented by Fulton, which uses no cog gears.

Jacks Tire & Rubber Co., Spokane, Wash., has been incorporated for $10,000 by Claude D. Randall, Floyd D. Daskin and John B. White.

Elgin, Ill., Association of Commerce has paid $7500 for a tract of land south of the city, which will be presented to the Duty Motor Truck Co. The concern agreed to remove its plant from Greenville, Ill., if a suitable site was donated.

Quaker City Rubber Co., Philadelphia, manufacturer of Trusty Friend, Quaker Cord and Miles cheaper tires and Multitubes, will occupy its large new building Nov. 1.

Reynolds Spring Co., Jackson, Mich., has declared a dividend of 1¾ per cent on its preferred Class A stock, payable Sept. 30.

R. L. Stephens Motor Co., Tacoma, Wash., with $7,500 capital, has been formed by J. W. Rash and R. L. Stephens.

Receivers to Ask Leave to Sell Allen Motor Car Co.

Columbus, Oct. 4—At a meeting of the creditors of the Allen Motor Car Co., which has been in the hands of George A. Archer and William C. Willard as receivers for almost a year, a decision was taken to liquidate the affairs of the concern. This decision was made because of the unsettled conditions in business generally and because of the difficulty in disposing of cars of a company under receivership.

This action is in line with the recommendations of the receivers, who submitted a report on the operation of the plant and the business since they have been in charge. It is claimed that more than $1,000,000 additional capital will be necessary to properly finance the company. No financial interests have been found that would undertake to underwrite that amount.

The claims against the company are approximately $1,900,000, although the amount is not fixed because of contingent liabilities as a result of many contracts for parts and bodies. All of the larger creditors were represented at the meeting. Judge Oscar W. Newman and Judge Schroth, representing the receivers, have tried to finance the company so that it could continue. Application will be made to Judge J. E. Sater in the Federal court for permission to sell.

DETROIT TRAILER MEETS TESTS

Detroit, Sept. 30—The Detroit semi-trailer, manufactured by the Detroit Trailer Co., has been given a rated capacity of 20 tons. Equipped with 40 by 12 in. solid tires, it has a rating of 800 lbs. per sq. in. With 38,400 lbs. on the four rear wheels, equipped with 14 by 10 in. tires, the same rating will give 22,400 lbs. on the rear wheels.

M. A. M. A. Sales Report Shows Car Production Holds Up

Accessory Makers Find Improved Morale and Declare That Business Depression Is Over

NEW YORK, Oct. 5—Reports of current business made by members of the Motor and Accessory Mfgrs. Assn. to the credit department show that their business for September is running slightly ahead of August. A considerable amount of new business has been booked, which fact indicates that no falling-off in the production of passenger cars is eminent. Collections generally are good and they show an improvement from month to month. Progress also is being made in reducing past due accounts. Indications are that business for the next two or three months will continue about as it has been running since May.

Fully as significant as the actual business booked is the feeling in all branches of the industry that the worst is over and that the tide has turned definitely toward better conditions. Improved morale is apparent throughout the industrial world and is reflected in nearly all lines. Leaders among financiers and manufacturers are convinced that the business depression has been due largely to a state of mind and that, once optimism dispels pessimism throughout the country, the consumption of finished products will increase, unemployment will become less general and buying power will expand.

So far as the parts makers are concerned, their chief complaint is against automobile companies which have failed to release partly fabricated materials ordered 15 months ago. There is a considerable number of companies in this group and it is felt that if they ever are going to get out of their difficulties they should have made some progress by this time. This does not apply so much to the truck field, because it is realized that truck sales have been virtually at a standstill for many months.

There is little complaint against the companies which actually are doing business and have been to some extent ever since the depression began. There have been of late comparatively few cancellations and automobile manufacturers have shown a disposition to clean up their commitments when price concessions have been made.

The report of August business made by members of the M. A. M. A. shows that there was a slight increase in the total of goods sold, as compared with July, and a very little reduction in the total of past due accounts.

AUGUST BUSINESS SLIGHTLY OVER JULY IN M. A. M. A. REPORT

Month	Total Purchases	Per Cent Change	Total Past Due	Per Cent Change	Total Notes Outstanding	Per Ct. Change
January	$ 6,264,587	.....	$8,099,727	.....	$4,359,871	.....
February	10,408,962	*66.15	6,717,165	†17.07	6,063,118	*39.08
March	20,120,386	*93.30	5,603,992	†16.57	5,069,877	†16.38
April	26,746,580	*32.93	5,352,271	†4.49	5,371,086	*5.94
May	26,781,350	*0.13	4,505,176	†15.64	4,460,355	†16.77
June	22,703,414	†15.19	4,720,973	*4.79	4,012,670	†10.37
July	23,096,214	*1.68	5,242,046	*10.79	3,690,154	†7.90
August	22,397,640	*1.31	4,348,790	†17.06	3,494,510	†5.30

IN THE RETAIL FIELD

Town & Country Motors, Inc., Minneapolis, has been formed to distribute Case cars in the northwest. The capital is $150,000. I. P. Bardin is president.

Sage Brothers Auto Supply Co., incorporated at $10,000, will deal in car supplies. William E. Sage and others filed the incorporation papers.

Walter M. Brown, Los Angeles, after 11 years as representatives of the Stutz, has canceled his contract and hereafter will devote his interests to the H. C. S.

Wisconsin Elkhart Co., Milwaukee, distributor of the Elkhart in Wisconsin, upper Michigan and southern Minnesota, has moved into its new quarters. It has a dealer organization of 55. F. J. Noetzel is president and general manager.

Dowe Garage Co., Beaver Dam, Wis., has been purchased by Harry Marthaler and Arthur Frank, who have been in the employ of the company for the last two years.

Luff Motor Co., Milwaukee, has been incorporated with $15,000 capital by Jacob Luff, Lewis Luff and Hyman Bockay, to deal in new and used cars, trucks, automotive equipment, etc.

Palace Garage Co., Marshfield, Wis., is a new $50,000 corporation organized by P. L., J. A. and B. A. Blum.

Security Auto Co., St. Paul, has been incorporated at $50,000 by Harry Firnett, D. T. Shay and J. P. Wellmerling.

McGuire Automobile Co., St. Paul, has become distributor for the Chandler and Cleveland cars in southeastern Minnesota and central western Wisconsin. M. J. McGuire for 11 years has been local retailer of these cars. A service station will be maintained.

H. J. Wurzburger Co., Los Angeles, has been organized and has taken over the distribution of the Kissel and Briscoe cars. T. C. Whitcomb is the sales manager.

Lynn C. Buxton, who has represented the Stearns for many years, has taken over the distribution of the Haynes.

Bratvold & Brickson, Stoughton, Wis., Nash and Dodge dealers, have dissolved partnership. Hildus Bratvold will continue the business and assumes the dealer franchises.

W. J. Trudell, Milwaukee, has taken over the Buick franchise at Sheboygan, Wis., succeeding the Raab Motor Co., which has been moved to Milwaukee and is handling the Ford exclusively.

Standard Unit Parts Corp., Chicago, has established a branch house in Milwaukee, under the management of W. F. Mark. The company is distributor of Continental motor parts, Borg & Beck clutches, Spicer universal joints, Pierce governors and Hy Duty fans. Of the $100,000 of authorized capitalization, the Wisconsin investment is given as $15,000 in the application for a local charter.

Victor M. Ganvreau, formerly designing engineer for the Pan Motor Co., and Walter L. Hornibrook, foreman at the plant, bought the Hudson and Essex agencies at St. Cloud, Minn., and will take over the business of the Schomer Motor Co.

Madison-Nash Co., Madison, Wis., has been appointed district distributor in Dane county of the Nash line, and retail dealer in Madison, the state capital. A. R. Dillon, for many years associated with the Rambler, Jeffery and now the Nash, is manager of the new concern.

John T. Dye, Los Angeles, one of the pioneers in the used car business, has joined the Elgin sales department.

Don Lee, Los Angeles, Cadillac distributor for the state, has taken on the distribution of Henderson tires and tubes.

W. S. Williams has formed the W. S. Williams Motor Co., of St. Paul, to conduct a Ford sales and service station. It has taken over the West Side Motor Sales Co. John Finch is vice-president and Harry C. Nelson is secretary and treasurer.

Carl A. Jaedocke, traffic manager for the W. H. Schmelzel Co., has been made permanent secretary for the new St. Paul Automotive Trade Association. The plural membership plan of the Chamber of Commerce has been adopted, which is expected to make the association's future secure.

White Motor Sales Co., Fargo, N. D., has been changed to Fargo Motor Sales Co. The purchase was made by G. S. Spalding, Minneapolis, E. F. Spalding, Fargo, and P. T. Spalding, Aberdeen, S. D. E. F. Spalding, who conducts the Spalding Supply Co., will be manager. P. T. Spalding, his brother, and G. S. Spalding, his father, have the Ford agency at Aberdeen.

R. & V. Knight car distribution for the northwest has been put in the hands of A. Carlos Brown, Minneapolis.

Schas Auto Co., Fargo, N. D., has opened a modern fireproof building costing $50,000. The firm will repair and rebuild cars, repaint and store automobiles. Sales of cars and accessories will be added.

Scripps-Booth Motor Car Co., Boston, has filed a voluntary petition in bankruptcy, declaring its liabilities to be $43,203 and its assets $18,958. The petition is filed by a vote of the stockholders, the unsecured claims being $18,851 and the secured $3113. The company will be reorganized.

American Motor Co., authorized Ford and Fordson dealer, Minneapolis, inaugurated a new plan on Oct. 1 for showing appreciation to customers for their trade, when a musical festival and dance, with vaudeville, was staged in the company's showrooms and service division. It was the opening of the building. J. M. Torbert is president.

Keaton Tire & Rubber Co. has designated Portland as northwest headquarters, and H. W. Thompson has been named district manager for the territory. The territory will include Oregon, Washington, Idaho and British Columbia.

Howell Swift Tire Co., handling Savage and Majestic tires in Oregon territory, has opened its second store in Portland.

Freeport Auto Parts Sales Co., Freeport, Ill., has purchased the business and lease of the Salient Sales Corp. Joseph Warawsky and Louis Sanders own the Auto Parts Sales company.

Curran-McDevitt Motor Co., Inc., Philadelphia, has been appointed distributor of Mercer automobiles in the Philadelphia territory.

P. S. Russel, president of the Packard Motor Car Co. of Missouri, has resigned from the presidency of the local branch, resignation to take effect Oct. 1. R. B. Mann, formerly general salesmanager of the Packard branch in Chicago, will succeed Russel.

Main Line Nash Co., Ardmore, Pa., has just been formed by Lester C. Huffman and William Thompson, Philadelphia, to handle Nash automobile sales in Main Line territory. Huffman was the founder of the Huffman-Southworth Co., with Southworth, and prior to that was with the B. L. P. Motor Co., distributor of Denby trucks in the Quaker City. Thompson formerly was with the Philadelphia Nash Co.

Quaker Assn. Meets—More than one hundred members of the Automobile Accessories Business Assn. of Philadelphia attended the first fall meeting of the organization in the quarters of the Philadelphia Automobile Trade Association, Broad and Callowhill streets. It proved to be an enthusiastic "get-to-gether" session, at which many topics of vital interest to the trade were freely discussed.

Thomas Musk, auto supply dealer, Fulton, Ill., has filed petition in bankruptcy, listing liabilities of $13,645.74, and assets of $11,096.02.

Johnson Motor Service Co., Davenport, Ia.—Formal opening of the Johnson Motor Service company plant has been set for Oct. 1 and will mark the progress made by the service company in five years—from an organization with a 900 sq. ft. capacity to a plant occupying a three-story structure of 30,000 sq. ft. A. B. Johnson is president, E. P. Adler vice-president, and A. J. Faerber, secretary.

American Tire & Rubber Co., Portland, Ore., one of the best known of the retail tire organizations of the city, has been named state distributor for the Mohawk tire. The company has been handling the General tire for a number of years. While no announcement was made, it is rumored that the change was made because General contemplates opening a factory branch in Portland.

Thomas H. Smart Motor Co.'s new home in Memphis is nearing completion and will be ready for occupancy by Oct. 1. Smart has been in the business 18 years, beginning with the White Co. at Cleveland, later with the Willys-Overland, Inc., until 1911 when he took the management of the Overland-Southern Motor Car Co. at Atlanta and later was appointed southern salesmanager of the Willys-Overland Sales Co. He came to Memphis in 1913 as president of the Memphis Overland Co. Mr. Smart is handling the Stutz car only at the present time, but contemplates adding high grade popular priced cars to his line.

J. T. Watson and R. H. Moseley have taken over the stand formerly occupied by J. P. J. Bruce & Co., and will operate the business under the style of the Auto Accessory & Tire Co., with Moseley as manager. They will conduct a general retail and mail order business in tires and accessories.

Charles E. Dyer and Joseph R. Tourangean, Hoopeston, Ill., have purchased the garage and business of the Rimes Motor Co.

Used Cars Menace to Motor Car Industry, Reeves Says

Trade-in Abuse Threatens Stability of Manufacturer and Dealer, Says N. A. C. C. Manager

NEW YORK, Oct. 3—The real menace of the automotive industry is the unscientific way in which used cars are handled, is the opinion of Alfred Reeves, general manager of the National Automobile Chamber of Commerce. In an address before the Automobile Dealers' Assn. of New York he declared that "it threatens not only the prosperity of the dealer, but through him the stability and standing of the manufacturer."

"It is not alone the dealer's problem, and efforts to better it should be made by the manufacturers in cooperation with their distributors," Reeves declared.

Among other questions which should be given careful consideration, according to Reeves, are lower insurance rates; better although not necessarily cheaper service; fewer taxes; a decrease in accidents, and a campaign which has been started by some interests to have motorists pay for the building of good roads, although the highways benefit the public as a whole. Reverting to the used car problem, he said:

"During the stress of the competition of the past six months, the ridiculous allowances for second-hand cars were a form of price-cutting. However, it was the same thing when there was an overdemand for cars. Even in those days dealers allowed more than cars were worth, so that car selling became largely a matter of trading with the owner of an old car. The salesman generally works harder for the customer than for his own house, with the result that cars were taken in at 10 or 15 per cent more than could be obtained for them in a fair market.

"The used car situation may not be better until human nature is better. Everyone has his own right to judge car values and it will take a lot of educating to prove to dealers the real value of used motor cars and trucks.

"The used car problem should be studied by the best brains of manufacturers and their dealers. Unfair allowances and inefficient selling plans, with the resultant money loss, are a blot on the escutcheon of one of America's greatest industries.

"Some car manufacturers have not been blameless in this, for under the stress of recent conditions they have sometimes pressed the dealer to take new cars in greater quantities than he has been able to handle. They have also overtraded through their branches.

"I look to see the car and truck manufacturers, by advertising and sales promotion work, help to move their own makes that their dealers have on hand, and thus broaden the market for new cars. Sales managers must appreciate the need to help dealers in the greatest of all obstructions to increased new car sales."

CONCERNING MEN YOU KNOW

H. H. Stackhouse, Springfield, O., president of the National Implement & Vehicle Assn., has been named by Secretary Hoover as a member of the National Unemployment Conference. This appointment gives the automotive industry two representatives at the conference, the other appointee being James Couzens, mayor of Detroit and former vice president of the Ford Motor Co.

American Bosch Magneto Corp.—New managers have recently been appointed for the American Bosch Magneto Corp. at its New York and Detroit branches. George Shortmeier, formerly New York manager for the Madison Rubber Co., and later district manager at New York for the Sinclair Oil Co., has been placed in charge of the Bosch branch at New York, replacing O. S. Stanley.

Charles L. Shedd is now manager of the Bosch branch at Detroit, taking the place of Roy Davey, who has been made manager of the manufacturing sales department at Springfield, Mass. Shedd was at one time promotion manager of the truck division of the Packard Motor Car Co., at Detroit, subsequently served as official distributor at Omaha for that company, and still more recently acted as sales manager of the Republic Truck Corp., New York City.

O. S. Stanley, formerly assistant service manager in New York City for the American Bosch Magneto Corp., has become affiliated with the Eisemann Magneto Corp., as assistant sales manager. At the present time Stanley is making a trip covering all of the corporation's service stations.

H. R. "Bert" Averill has become associated with the Cole Motor Car Co., Indianapolis, in the capacity of special representative. He was recently identified with the National and will at once take an active part in the Cole organization.

F. A. Petrie, assistant sales manager of Dort Motor Car Co., Flint, Mich., has resigned to become vice-president of the Mission Motor Co., Los Angeles, southern California distributor of Dort. He will handle the wholesale end of the business.

Charles S. Turner has been appointed to the sales organization of Liberty Motor Car Co. For the past five years he has been connected with Robertson-Cole Co., New York, in foreign sales development.

R. A. Picard, for several years sales manager of A. J. Picard & Co., automotive equipment jobber, New York, has resigned to become sales manager of the Metal Stamping Co., Long Island City. Picard has been active in association work in the jobber field, having been secretary of the standardization committee of the Automotive Equipment Assn. and secretary of the Eastern Automotive Equipment Assn.

Edward DeMooey has been appointed general manager of the Cleveland Motor Sales Co., Haynes distributor in Cleveland territory. DeMooey, who has been an officer of the company since its organization, succeeds G. P. Moore, who retired. M. F. Bramley has been elected vice-president and Harry Walker, secretary-treasurer. F. J. Graf continues as sales manager.

J. A. Frank, territorial sales manager for Anderson Motor Co., Rock Hill, S. C., was a recent Seattle visitor. He finds conditions in the northwest righting themselves steadily and Powell Motor Co., Washington distributor for the Anderson cars, making steady gains.

Henry Ford, the American motor manufacturer, has just had the freedom of the city of Cork conferred upon him, and the next time he visits Ireland he will be honored by a fitting reception headed by the Lord Mayor and the city officials.

Earl B. Staley, one of the pioneers in the mechanical end of the automobile business in Seattle, has announced the opening of the Earl B. Staley Co., automotive engineers. Staley was formerly with the Waterhouse Co., engaged in building Vulcan trucks.

Forrest P. Richardson has been promoted from purchasing agent of the Leach Biltwell Motor Car Co., Los Angeles, to assistant general manager of the company. Richardson, who also is a director of the Leach company, has been connected with the concern for more than two years, and, with Mr. Leach, was one of the founders of the enterprise, which now is a $5,000,000 corporation and equipped to produce 1200 cars a year.

B. V. Joern, for several years associated with the Gillette Rubber Co., Eau Claire, Wis., in its sales department, has resigned to accept a position with the Critchfield Advertising Agency, Chicago. He has been assigned to the Minneapolis office.

Alfred Danielson, Milwaukee, has assumed the general management of the Lee Haven Auto Co., Merrill, Wis., one of the largest service stations in northern Wisconsin. He spent a year in Norway and Sweden for the Nash Motors Co. of Kenosha, Wis., later going to Omaha for the Nash Sales Co. and returning to Milwaukee to take charge of the service department of the Reeke-Lafayette Co., Milwaukee, distributor of the Lafayette.

A. T. Smith, Los Angeles, who for many years was manager of the local branch of the Firestone Tire & Rubber Co., and subsequently manager for the Pacific division, and M. S. Bulkley, who established the Autocar in the state as early as 1908, are both now identified with the Mack truck as special sales representatives. F. C. Atwell, who formerly was manager of the Mack branch at Portland, Ore., is now assistant vice-president of the coast organization.

C. J. Kubach has been elected president of the Moreland Motor Truck Co., Los Angeles, to succeed R. H. Raphael. After being closed for several weeks, this company's plant at Burbank has resumed operations. Watt Moreland was elected a vice-president and continues as general manager.

Ralph L. Ross, Los Angeles, formerly with the Continental Motors, has joined the Leach-Biltwell Motor Car Co., as superintendent of the local plant.

George W. Davis Motor Car Co., Richmond, Ind., has named Jay Dewey as its Pacific coast sales manager, with headquarters at Los Angeles. Dewey resigns as general sales manager for the Lexington Motor Co., to accept his new position.

J. H. McDuffee has been named assistant general manager of the Cole Motor Car Co., Indianapolis. He will assume his new duties Oct. 1. McDuffee began his career with the Locomobile company in New York and since that time, with the exception of the last three years, has been identified very closely with the industry. During recent years he has been connected with the Willys-Overland company in several executive capacities.

Major R. W. Schroeder has joined the research and advisory staff of the Underwriters' Laboratories, Chicago.

Murry Irwin has been elected president of the advance Manufacturing & Tool Co., Cleveland, a corporation which makes screw machine products and automobile parts. R. H. Lord was elected secretary and treasurer.

O. H. Browning, motor truck salesmanager of the International Harvester Co., is in the south on a state-of-business investigation trip. He reports greatly improved conditions from the territory visited.

M. L. Pulcher, vice-president and general manager for Federal Motor Truck Co., is a Portland, Ore., visitor, guest of Del Wright, manager of the Portland Federal branch.

W. B. Clowes, assistant sales manager, for a number of years with the Eisemann Magneto Corp., has severed his connection with that company. Clowes has not stated his future plans.

I. H. C. Tractor Sales Drive Wins Reluctant Buyers

Chicago, Sept. 28—Tractor sales under the force of the International Harvester Co.'s "Tractor-a-Week Drive," one for each of its branch houses, are showing an increasing number and the drive is a success. The number of sales to date is not reported. As a result of this concentration of sales forces on one line there has been a noticeable drop in other lines handled by the company. For instance, motor trucks, which were selling at the rate of 100 a week before the tractor drive was started, have fallen off to 80 and 85 a week.

On the assumption that there will be a decrease in the price of building materials of perhaps 10 per cent between now and spring, it is announced that there will be no work done on the large new factory of the International Harvestor Co. at Fort Wayne, Ind., this year.

Eastern Equipment Makers Back A. E. A. Sales Program

Supplement Efforts of the National Assn. in Issue of Educational Literature to Members

NEW YORK, Oct. 5—A sales promotion program to supplement that of the Automotive Equipment Assn. was authorized here by the Eastern Automotive Equipment Assn. Members along the Atlantic seaboard states from Maine to Maryland were represented at a meeting and reviewed the plan of a four-page merchandising letter which will be sent out in the name of the association to a list of dealers and garagemen in the territory covered by the members.

The letter, which is illustrated, tells of the opportunity for profit in the sale of automotive equipment; tells how to sell it, and shows helps in the way of display boards and advertising material which dealers can obtain from the manufacturers through the jobbers.

This letter may be followed at intervals by others of a similar nature.

Decision to send out the letter was taken after Ray W. Sherman, merchandising director of the Automotive Equipment Assn., had addressed the meeting, outlining the work of his department. Sherman's talk will be followed up in a week or two by addresses before salesmen of jobber members of the association in New York City, central and western New York, Boston, and possibly one or two other New England cities, and Philadelphia.

Another speaker was William R. Norris of the McQuay-Norris Co., who gave a vigorous talk on the necessity of complete cooperation and confidence among jobbers if they are to accomplish anything in the broadening of retail outlet for products of the industry. Norris regarded the assistance of the trade in merchandising equipment as an obligation on jobbers as well as manufacturers.

The association voted to hold its annual meeting in New York on Tuesday of show week, when the following nominations for officers and directors will be voted upon: president, H. M. Savage, Whetmore-Savage Co., Boston; vice president, G. N. Shafer, W. E. Pruden Hardware Co., New York City; secretary, T. B. O'Neill, Martin-Evans Co., Brooklyn; treasurer, Bernard Miller, Economy Auto Supply Co., Newark; directors, F. J. Murray, Post & Leste, Boston; George B. Shearer, Gaul, Derr & Shearer Co., Philadelphia; E. T. Ball, Joseph Straus & Co., Buffalo; R. J. Cahall, Cahall Motor Supply Co., Philadelphia; Wallace D. Page, American Motor Equipment Co., Boston; E. T. Satchel, Motor Accessories Co., Allentown, Pa.; J. R. Hunt, of the Automotive Supply Co., Baltimore.

SAYERS REDUCES PRICE

Cincinnati, Oct. 4—Sayers & Scoville Co. has reduced prices on its roadster and five-passenger touring car from $1,945 to $1,795.

The Readers' Clearing House

Questions & Answers

CONDUCTED BY WILLIAM H. HUNT

Analysis of Simms-Huff Maxwell Generating Circuits

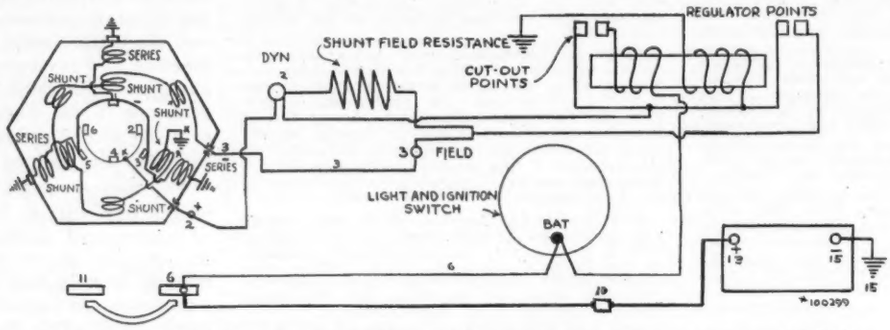


Fig. 1—Simplified diagram of the internal circuits of the Simms-Huff, model M.G. motor-generator used on the 1919 Maxwell cars. This diagram shows the paths of the generating current only

Q—The generator on a 1919 Maxwell will not operate as it should, At times it will show charge, then it will stop. With the terminals short-circuited it charges alright. The starter works well. Can you advise what the trouble may be? —Verne O. Walter, Conde, S. D.

We believe the trouble to be a combination of a burned-out field resistance and dirty, loose or otherwise imperfect connections on the dash panel; or it may be that the regulator points are burned or dirty. Fig. 1 shows the complete charging circuit analyzed and stretched out so that the current paths can be easily followed. It will be noted that the generator is what is known as compound wound; that is to say, three of the field pole pieces carry two windings. The heavier of these are called the series windings and the lighter the shunt windings.

The series windings may also be called series packing coils, for the reason that, when the apparatus acts as a generator, the current through them flows in an opposite direction to that through the shunt windings. This has the effect of preventing the magnetism rising to too high a value.

Tracing the path of the current from the generator through the regulator and cutout to the battery, the action is as follows: beginning at positive brushes Nos. 2, 4 and 6, the current is led to the outside of the generator to binding post No. 2 (positive). From here it is led by an exterior wire to the instrument panel on the dash connecting with binding post No. 2 (Dyn.). By means of a short wire it then passes to the frame of the regulator cutout, then around the shunt winding of this instrument to ground—in this case the frame of the panel and the metallic dash of the car.

From here the initial current flows back through the frame of the car to the frame of the generator and through the series field windings, grounded to the generator frame, to negative brushes Nos. 1, 3 and 5. This initial current has no other function than that of closing the cutout point of the regular cutout. As the engine speed increases, the generator output mounts in voltage until the magnetism of the cutout core becomes strong enough to attract the cutout armature—at the left—bringing the points together. The current then flows through the cutout armature, through the points, through the heavy series winding of the regulator cutout, thence by exterior wire to the terminal on the lighting and ignition switch marked "Bat."

From this point another exterior wire (6) conducts the current to contact No. 6 of the starting switch. From here a heavy cable leads to the battery and is coupled with another heavy cable from binding post No. 13 of the battery by means of the coupling 10. The remainder of the circuit is through the battery out of negative terminal 15, by way of a heavy cable to ground connection 15 and thence by way of the frame back to the grounded end of the series windings.

The path through the series windings to the negative brushes has been explained. The only fault with such an arrangement, if it were not regulated, would be that with the engine up to high speed the generator output would mount to excessive figures, perhaps 35 or 50 amp. To hold this output down to a value that will not be dangerous to both the generator and the battery, the shunt field resistance is used.

We will now trace the current which builds up the magnetism in the generator field. Beginning again at generator binding post No. 2 (positive), trace to instrument panel, post, dynamo 2, and to the frame of the cutout. It will be seen that from here current flows through the regulator point and back to the instrument panel post marked No. 3 Field. From here the current is led by exterior wire back to the generator binding post No. 3 and passes around the shunt or fine windings of all six of the generator pole pieces, finally going to ground at the point X on pole piece A. It then flows through the frame of the generator and the series field windings

NAME AND ADDRESS ON INQUIRIES ARE NECESSARY

Answer to a request for the names of books treating on automobiles, tractors, magnetos and ignition is being withheld pending the receipt of the name and address of the inquirer. Will the reader please send this to MOTOR AGE at once.

The Readers' Clearing House

THIS department is conducted to assist Dealers, Service Stations, Garagemen and their Mechanics in the solution of their repair and service problems.

In addressing this department, readers are requested to give the firm name and address. Also state whether a permanent file of MOTOR AGE is kept, for many times inquiries of an identical nature have been asked by someone else and these are answered by reference to previous issues.

MOTOR AGE reserves the right to answer the query by personal letter or through these columns.

Emergency inquiries will be replied to by letter or telegram.

Addresses of business firms will not be published in this department, but will be supplied by letter.

to brushes 1, 3 and 5, where the circuit is completed.

As the generator output rises, the core of the cutout begins to attract the regulator armature, and, when the current has reached the normal point, the magnetism becomes strong enough to separate the points. The only path left for the field current is then from Dynamo 2 binding post, through the shunt field resistance to Field binding post No. 3, and then back to the field winding of the generator.

The resistance cuts down the current to such an extent that the shunt field at once begins to weaken. This lowers the output of the generator until the current drops so low that the magnetism of the cutout core can no longer hold the regulating armature against the tension of its spring, and the regulator points again come together. From this time on the generator again begins to build up in output until the critical point is reached, when the regulator points again separate. This cycle is repeated at such a rate of speed that the regulator points really have a vibratory movement.

As we understand your question, short-circuiting between generator binding post positive No. 2 and negative No. 3, will cause the generator to generate satisfactorily. This proves without question that the trouble lies somewhere outside of the generator. It may be looked for in the contact of generator binding post No. 2 and 3, instrument binding post Dynamo 2 or Field 3, the regulator contact point, or any of the wires connecting these various points.

All contacts must be carefully cleaned and the wires tested to see whether current passes through them or not. This last can be done with test points and a 110-volt current with a lamp in series, or with test leads from a storage battery. It is plain to see that if the cutout points are dirty and the shunt field resistance burned out, that under no circumstances can enough current pass to energize the generator field.

To test the resistance, connect a wire from binding post No. 2 to binding post No. 3; this should cause the generator to generate. Examine the regulator points and, if they are burned or dirty, clean them with a fine ignition point file. After they are cleaned, hold them together with the fingers and speed up the engine. If all connections are correct, the generator should show a high current output. With the engine still running, separate the regulator points. If the shunt field resistance is normal, the current output should fall to a much lower point. If the shunt field resistance is burned out, the current will fall to zero.

The maximum charging rate of the generator with everything correctly adjusted is 15 amp., and the normal rate 12 amp. at a speed of 1200 r.p.m. If the current falls off at high engine speed it is an indication that the drive belt is slipping.

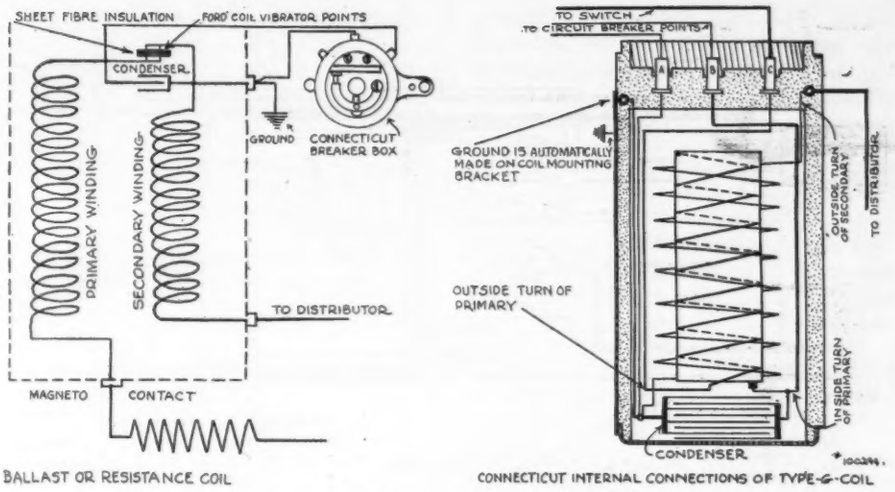


Fig. 2—Suggested method of adapting a Ford vibrator coil for service as an emergency replacement unit on Overland 90, Overland 4, Chevrolet or any car using Connecticut terminal coils

Rearranging Ford Coil for Distributer System

Q—Inform us whether a Ford unit coil can be used for ignition on a 90 Overland car.

2—If this can be done, publish a wiring diagram showing how the connections are made.

3—If a ballast coil is used, how should it be connected into the circuits?—Clark & Shephard, Hopinsville, Ky.

1—There is no mechanical reason why this cannot be done, but there may be electrical reasons why it would not be practicable. These would be the differences in resistance and inductance between the standard Ford coil and the Connecticut coil furnished as standard equipment on this car. We have no positive knowledge that there are such objections and, as the expedient is quite simple and inexpensive, we recommend that it be tried.

2—See Fig. 2. The coil to the right is the standard Connecticut coil, while that to the left is the Ford coil, showing the suggested connection. As far as the windings are concerned, they are practically identical in both units. The only problem is to get the condenser connected right. In the Connecticut coil it will be seen that the condenser is provided with an outside terminal, one of the three on top of the coil, and that the breaker points are connected to the coil terminals, A and B. In the case of the Ford coil there are only two primary terminals available and some method must be devised of connecting the condenser across the distributer breaker points.

The simplest plan is to back off the coil adjusting screw until the breaker points are separated and insure their permanent separation by inserting a piece of fiber or other insulating material between them. The next step is to run a wire from the block which supports the vibrator spring directly to either one of the distributer breaker points. Another wire is run from the remaining distributer breaker point to the primary-top terminal of the coil, and still another wire from this terminal to a ground connection—any metal part of the engine or frame.

It will be seen that this wiring scheme has the effect of bridging the condensor across the breaker points and also grounding one of the latter. As the battery is also grounded on one side it is quite apparent that the necessary circuit is completed. The ground from the top primary terminal also has the effect of grounding one side of the secondary windings, so all that remains is to run the high tension wire from the lower terminal on the side of the coil, to the center point of the distributer.

3—The ballast or resistant coil is connected to the bottom terminal of the ignition coil, as shown in the diagram. The wire from the switch, which ordinarily runs to the Connecticut coil binding post C, is connected to the terminal of the ballast coil. As mentioned before, the comparative resistance and inductance of these coils being unknown, we cannot exactly predict whether or not the Ford coil will serve as a satisfactory replacement unit. However, we are of the opinion that it will prove sufficiently satisfactory for use in emergencies until the proper coil is procured.

ADDING MAGNETS TO MAGNETO

Q—Would any harm result to a Model H K-W magneto if five magnets were installed instead of four? The model T K-W that is now on the Avery tractor upon which we are working, does not seem to give a hot enough spark at low speeds to fire the gas completely.—John L. Nelson, Symerton, Ill.

No. No harm will result, but we question that the result will justify the expense. We recommend that the present magneto be thoroughly magnetized, overhauled and that new points of genuine platinum be installed. If this does not result in a spark of great enough intensity, the only recourse will be the installation of a larger magneto.

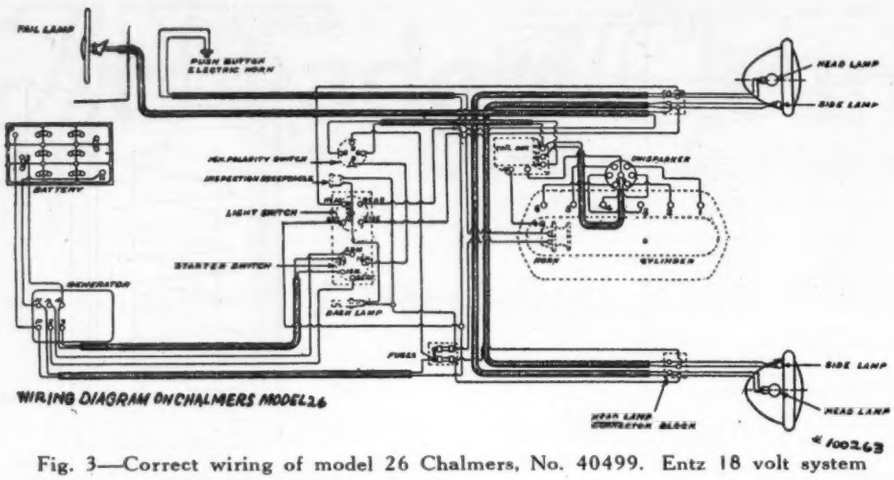


Fig. 3—Correct wiring of model 26 Chalmers, No. 40499. Entz 18 volt system

INQUIRIES IN CHALMERS MODEL 26, NO. 40499

Q—What is the correct way to wire a Chalmers model 26, No. 40499?

2—Can a No. 5 hub for wire wheels be installed on this car?

3—How is the Stromberg model "B" carbureter adjusted?

1—See Fig. 3.

2—The No. 5 Houk hub was designed to fit this model. Full instructions can be secured from the Wire Wheel Corp. of America, Chicago.

3—The cutaway section of this carbureter, illustrated in Fig. 4, will make the adjustment instructions clear. The type "B" is a concentric type carbureter. It has its spray nozzle PN mounted in the center of the carbureter and in the center of the float chamber, with its point 3/16 in. above the normal gasoline level and surrounded by a modified venturi tube. This nozzle is proportionate inside the carburetor and never needs attention or adjustment, although it is at times necessary to change the nozzle size.

After the carbureter is installed and the gasoline turned on, note the level of the gasoline in the float chamber. It should be about 15/16 in. from the lower edge of the glass marked X. This level is adjusted at the factory and should be right. In case it is obviously wrong, remove the dust cap "G" and turn the adjusting screw "S" until the proper level is obtained. If the gasoline is too high, screw the nut down; if it is too low, screw the nut up. Do not change unless absolutely necessary.

To start the engine, close the valve S3 and the hot air horn H. The engine should then start on the second or third turn. If not, open the valve and it ought to start on the next turn. Great care should be taken to see that this valve is instantly open as the engine starts and is kept open. Turn up the adjusting nut "A" until the spring S1, which is the low-speed spring, seats the valve tightly. See that the high speed spring above "B" is free and does not come into contact with the nut on top of the auxiliary valve stem. Start the engine and turn nut "A" up or down until the engine idles properly. This is the low-speed adjustment.

Advance the spark and open the throttle. If the engine backfires through the carbureter, turn high-speed adjusting nut "B" up until backfiring ceases. If, adjusted thus and running at low speed, the engine gallops or the carbureter loads up, the mixture is too rich. The nut "B" should be turned down until galloping or loading up ceases. This is the high-speed adjustment. The spring above nut "B" should always have at least 1/32 in. clearance between it and the nut at the top, when the engine is idle.

If, after adjusting the nut "A" until the mixture on slow speed is correct, you find that the valve is off the seat while the engine is at rest, it indicates that the nozzle is too large. If you find that, in order to get proper mixture on high speed, the nut "B" has been turned up so far that the high-speed spring is in contact with the small nut on top of the air valve stem when the engine is at rest, the nozzle is too small. To remove the nozzle, take out the drain cock in the bottom of the carbureter and then use a regular screwdriver. The nozzles are numbered according to size; for instance, nozzle No. 59 is larger than No. 60.

SPEEDING UP E45 BUICK

Q—Advise us how to speed up a 1918 Buick E45 engine. We are going to install new pistons, connecting rods, block and valves. The car will do 60 m.p.m. now easily but we want it to do 75 m.p.h. Is this possible without changing tires or rear axle ratio of 4 to 1?—S. E. O'Donnell, Seattle, Wash.

A speed of 75 m.p.h. will depend entirely upon engine speed. If you can bring this up to about 3000 r.p.m. the 4 to 1 ratio will make a speed of 75 m.p.h. or better. However, we rather doubt that this high engine speed can be attained. It will be necessary to install very light pistons and connecting rods and possibly enlarge the valves. On the whole, we believe you would do better to try for an engine speed of about 2600 r.p.m. and raise the gear ratio to 3¾ or even 3½ to 1.

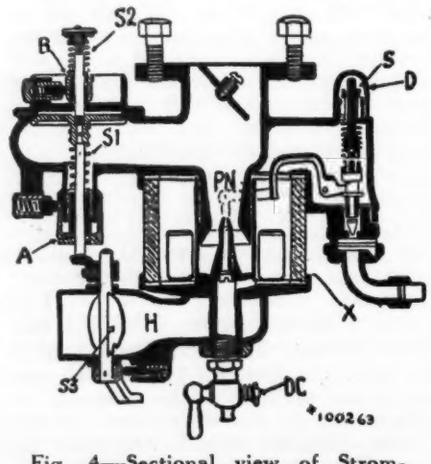


Fig. 4—Sectional view of Stromberg model B carbureter, showing points of adjustment

GENERAL QUESTIONS ON GENERATORS

Q—Explain how the generator generates current. When the generator is at rest, are the field coils neutral or are they magnetized?

2—How can some generators, such as the Northeast and the Delco, be used as starting motors?

3—Does the Delco motor-generator on the Buick turn in the same direction when starting the engine as in generating current?

4—Does the Ford generator cause any trouble from over-oiling from the flywheel?

5—What would be the proper procedure on the road if the cutout should go wrong and the current from the generator become uncontrolled?—Subscriber, Algona, Wis.

1—This subject was explained very thoroughly in the series on "How the Electric System Works." There is always a little magnetism left in the fields when the generator is at rest. This is called residual magnetism and is sufficient to start building up a current which still further strengthens the fields.

2—The Northeast and Delco starter-generators are wound with heavy wire on part of their fields. For this reason they become powerful electric motors when the current is passed through them.

3—The Delco starter-generators turn in the same direction, whether used as starters or generators.

4—We have no record of any such trouble.

5—The best plan is to remove the covers over the brushes and lift them clear of the commutator, tying them securely with string or wire. Plain shunt wound generators can be directly short-circuited. This has the effect of protecting them by almost entirely cutting out the current output.

REDESIGNING THE FORD FOR MORE SPEED

Q—We are contemplating building a racing car, using a Ford chassis, and would like your advice on the following questions:

1—We wish a motor capable of turning over 4000 to 4500 r.p.m., using a racing type 16 valve head. We have a special high lift camshaft. Shall we use this with the head mentioned?

2—Is it feasible to bore out rocker arms on the head and put in brass bushings?

3—Are slightly oversize valves advisable for this head?

4—Which ignition is preferable, Bosch or Philbrin?

5—We are considering Master, Zenith and Rayfield carbureters. Which has the more desirable points?

6—We expect to remove the magnets from the Ford flywheel, use aluminum pistons and possibly rods. Should the

flywheel have additional weight added or should the weight be decreased and the crankshaft counterbalanced. We would like to know what the weight of the flywheel and counterbalances should be, in proportion to the weight of the pistons and rod.

7—Can the Ford standard rod be machined down or drilled out, and is this more desirable than using aluminum rods? What should the rod's weight be on each end, in proportion to piston weight? How much metal can safely be taken from the Ford rod?

8—Can an aluminum rod be bored out and a babbitt bearing poured in, and is this advisable?

9—Can a disk wheel be made of ¼-in. aluminum that would stand the end thrust of racing on half tracks?—Smith Motor Sales Co., Casper, Wyo.

1—It will be impossible for you to realize any such motor speed. An official test run by the U. S. Bureau of Standards using a 16 valve head showed a maximum horsepower of 32 at a speed of 2800 r.p.m. This was with the standard camshaft. The high lift cam may have a trifle better speed; however, this is questionable.

2—It should not be necessary to bore out the rocker arms. Whether it can be done or not depends upon the amount of stock in them.

3—The oversize valves should not be necessary.

4 and 5—It is counter to our policy to recommend any particular make of device or apparatus. Some designers of Ford racing cars have abandoned the magneto in favor of the battery ignition system for the reason that the former consumes slightly more power.

6—Some builders have increased the weight of the flywheel, retaining the magnets, while others have gone so far as to remove the magnets and machine the flywheel down much lighter. We believe the better plan is to remove the magnets and add a band of practically their same weight shrunk to the outside diameter of the flywheel. A light flywheel makes for quick acceleration, while a heavier flywheel produces a steadier running engine. Regarding the question of the weight of the flywheel in proportion to that of the piston and connecting rod, we are not prepared to answer, as it has never, to our knowledge, been worked out mathematically. The whole subject of Ford rebuilding is one of "cut and try" and also "follow the leader." It affords wide scope for the exercise of originality.

7—The weight of the Ford connecting rod can be reduced considerably by filing away the die marks on the side and by drilling holes, as shown in Fig. 5. It will be noticed that the holes increase in size from top to bottom. The last hole should be an inch or more away from the connecting rod bearing, as this part is rotary rather than reciprocating. How much metal it is safe to remove is unknown. On the whole, we believe you would do better to install the aluminum rods.

8—Aluminum connecting rods come fitted with babbitt bearings.

9—We would advise that you do not experiment with aluminum disk wheels. The risk involved is too great. The small engine displacement racing cars,

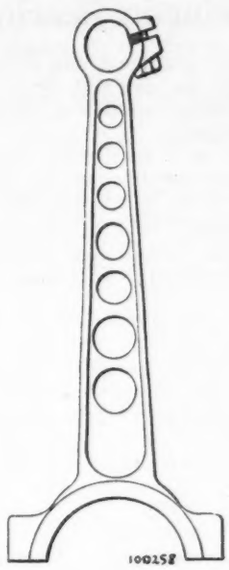


Fig. 5—How many Ford engine rebuilders lighten the connecting rods without dangerously reducing their strength

which are making such wonderful records this year, are all wire wheel equipped.

COMPLETE DATA ON TIRE SIZES AND PRICES

Q—Can you give us the name of the publisher of a book that has the names of all the manufacturers of automobile tires with prices, kind of tires, and sizes made by each company?—Jernagan's Garage, Milton, Fla.

The Tire Rate Book, published by the Class Journal Co., 239 W. 39th street, New York.

CHANGING IGNITION SYSTEMS

Q—Could we install a D4 or an N.U. 4 Bosch magneto on a 1914 model Buick four in place of the present Delco outfit?—Joseph T. Miller, Rockville, Ind.

While there is no electrical reason why this cannot be done and no insurmountable mechanical obstacle to the installation, we very much question the advisability of undertaking it, for the reason that it would entail an expenditure out of all proportion to the value of the car. It would be necessary to cut the distributer housing from the front end of the starter generator, install a new shaft between this unit and the pump, mount the magneto on a substantial bracket, and drive it by means of silent sprockets and chains from the new shaft. The cost of the installation would be prohibitive.

Your second inquiry is being replied to by letter.

WIRING DIAGRAM OF 1914 STUDEBAKER FOUR AND SIX

Q—Publish a wiring diagram of the 1914 Studebaker Six.

2—The car runs all right, but the battery runs down in two days. Suggest a remedy.—Dardanelle Machine Shop, Dardanelle, Ark.

1—See Fig. 6. This diagram covers both the four and the six-cylinder models, with the exception of the extra two wires from the distributer.

2—That the battery discharges in two days is no indication that the electrical system is at fault. The trouble may be due to poor separators between the battery plates. This can be determined by any battery service station.

A simple way to test whether there is a leakage in the car wiring system which is draining the battery is to disconnect both the heavy and the light wires from either of the battery terminals and test from the terminals to the wires with a voltmeter. With all the switches turned off there should be no reading. If there is, a leakage is indicated, which should be traced down and eliminated. This is a somewhat complicated job, but by following the circuits as shown by the wiring diagram, you should be able to accomplish it.

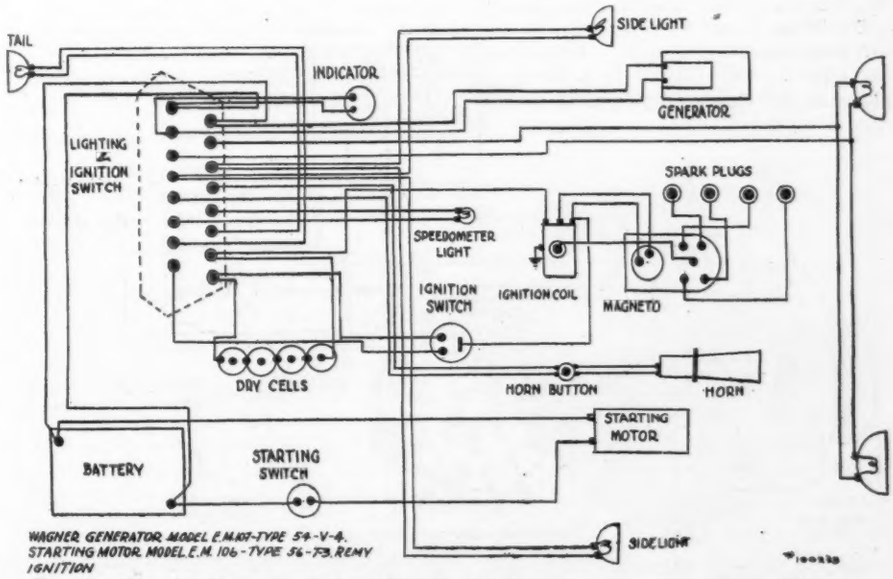


Fig. 6—Circuit diagram of the 1914 Studebaker six car. Generator, Wagner; starter, Wagner; distributer and coil, Remy

Valuable Experience in Burning-in Bearings

NOTING the article in the September 1 issue on burning-in bearings, I believe that my experience along this line may prove of value to your readers. In the first place there are several essentials to this process which were overlooked in the article. Better results will be obtained by line reaming the bearings oversize and then removing some shims so as to leave about .001 in. metal flow during the burning-in. The best results I know of have been obtained by reaming the bearings .002 in. oversize and removing .003 in. shim. This tends to give a natural clearance at the joint of the bearing.

Referring to the reaming outfit shown in Fig. 5—you do not place sufficient emphasis on the necessity and importance of securing correct alignment of the crankshaft bearings with those of the camshaft. If the bearings are reamed out to the proper size and correct alignment there need be no difficulty experienced because of the timing gears not meshing properly. I have found that the two prime essentials to success are proper alignment and oversize bearings with the removal of a shim. If this procedure is followed the gears will mesh properly.

Strange as it may seem, I have found that better results can be obtained by using a water spray over the bearings while burning them in. This, of course, necessitates having the cylinder bores well protected by a coating of oil or grease.

Another requisite to success in bearing burning is that the pins on the crankshaft be round and that the crankshaft be true—not sprung—throwing the pins out of alignment. The quality of the surface or finish on the crank pins is many times overlooked. A well burnished surface will considerably add to the life of the bearing.

The best method I know of is to lap the pins carefully, using a wood lap and fine valve compound with plenty of oil for three or four minutes. The lap should not be the full width of the bearing and in operation should be constantly moved sideways on the pin to avoid forming grooves. After the lapping, the finishing is completed with crocus cloth which leaves a mirror-like finish and one which will add greatly to the wearing qualities of the bearing.

I have had a great deal of experience in this work and I have many times noticed that the chief difference between an A1 and a fair job was in the method employed rather than in the amount of labor expended. In other words, it is not nearly so much a matter of the time put on the job as it is of care and excellence of workmanship. The average garage job leaves much to be desired along this line, as the ordinary garage mechanic has never had the opportunity to gain much experience along the line of engine rebuilding, which is a new departure in the industry. The writer can foresee a wide field along this line for the live, wide-awake garageman; but in order to be sucessful, the best methods must be employed.

The foregoing is not written in a spirit of criticism but in the hope that it may open up in the columns of MOTOR AGE a discussion as to the advantages and disadvantages of various methods, as used by the men who have tried them out. In my experience in the use of the burning-in process, I have had considerable trouble. What I have found out through hard work and painstaking experiment I am passing on, in the hope that it may be of some value to someone else.—J. A. Glattly, Detriot, Mich.

(Mr. Glattly has our sincere thanks for the foregoing carefully written explanation of his method of using the burning-in process. As suggested, we hope that this contribution will encourage others and that the matter may be thoroughly threshed out through these columns to the ultimate benefit of the entire industry.—Ed.)

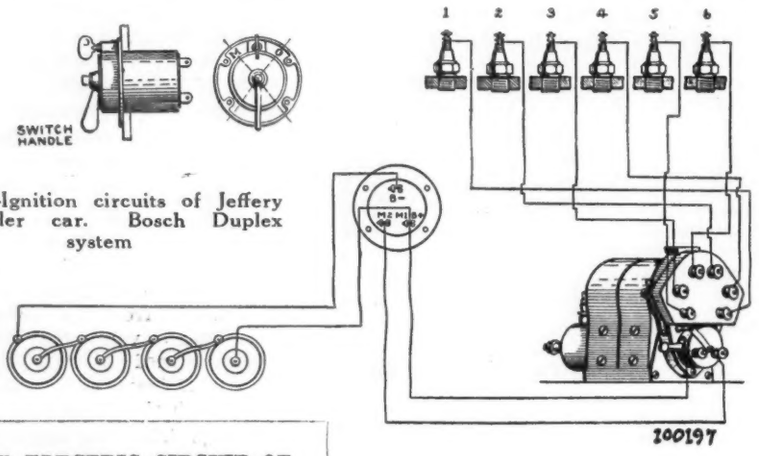


Fig. 7—Ignition circuits of Jeffery six-cylinder car. Bosch Duplex system

COMPLETE ELECTRIC CIRCUIT OF JEFFERY SIX

Q—Publish a diagram of the lighting and ignition circuit of a Jeffery car, model 96—Warner L. Keebler, Waupun, Wis.

See Figs. 7 and 8. Fig. 8 is of the starting, generating and lighting circuit, while Fig. 7 is a diagram of the Bosch Duplex system used.

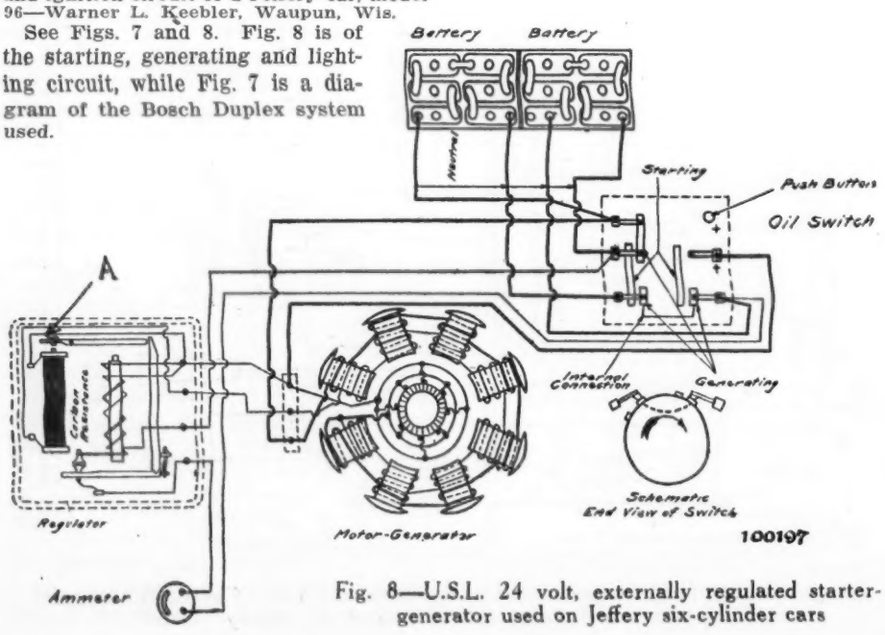


Fig. 8—U.S.L. 24 volt, externally regulated starter-generator used on Jeffery six-cylinder cars

WHAT SIZE PAINT SHOP NEEDS BAKE OVEN

Advise whether or not a bake oven for use in connection with automobile painting is practical for a shop that turns out from 75 to 100 jobs annually. If so, is it possible to construct one that is practical and how should we proceed?—Mosher Brothers, Dixon, Ill.

You do not state whether you contemplate an installation of a "force-drying" system for the body coats, or a high-heat oven for enamelling the stripped parts. If the former the answer to your question is NO. Force-drying of the body coats is essentially for quantity production—the apparatus is quite expensive and it would hardly pay for an output such as you state.

However, if you mean a high-heat oven for enamelling the fenders, hood, splashers, etc., the answer to your question is YES. Such finishes are the hardest and most durable ones that the automobile painter can produce, and most of these parts are so finished at the factory. The work is simple, but it requires special apparatus and materials that are not used in regular automobile painting.

The work is very profitable and can be turned out quickly. The materials used run from 85c to $2 a gallon and they do not deteriorate from exposure as do those that are air-dried.

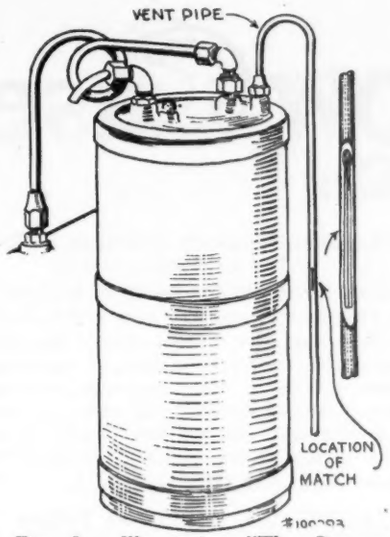


Fig. 9 — Illustrating "The Strange Behavior of a Vacuum Tank." The enlarged section of the vent pipe shows the location of the hidden cause

MYSTERY TALE
The Strange Behavior of a Vacuum Tank

The Mystery Tales you are publishing are very interesting and the word "mystery" is a very fitting one for some of the problems we mechanics have to contend with.

I have a mystery tale that perhaps would be interesting to the readers of MOTOR AGE—in fact, it was very interesting to me for a long time before I located the mystery. A Dodge car had the habit of stopping. It had no certain time or place to stop but the engine would stop completely sometimes, often within a block. Again it would run for miles with no indication of trouble. There was no difficulty in starting, as it would start with perfect ease immediately after it stopped. The ignition was perfect, as was proven by the fact that a good rich spark was going to the plugs even while the engine was coming to a stop.

The carbureter was examined and found to be in perfect shape. Gasoline would flow freely both to and from the float chamber and spray nozzle. The vacuum tank was taken off and examined and it seemed to function perfectly.

Everything was done that my experience had taught me, but it was of no avail. In my search for a clue I was riding on the running board watching the engine perform. I had taken the top of the carbureter off and I happened to see that while the engine was stopping, the gasoline disappeared very rapidly from the float chamber, much more rapidly than would have been the case had it been simply passing through the nozzle in the normal way. I observed also that, as soon as the engine stopped, the gasoline would run back into the float chamber. This action accounted for all my trouble but not for the cause. This was found to be a part of a broken match that had made its way into the vent pipe on the vacuum tank, which in this case extends clear to the bottom. The match length, according to my theory acted as an automatic valve. It would be drawn to the top of the pipe and, lodging in the bend, would cut off the air which ordinarily rushes in to take the place of the vacuum created when the top chambers empties into the lower one.

There being a slight leak in the valve between the upper chamber and the intake manifold tube, the result was a vacuum in the upper chamber which not only prevented the gasoline's flowing to the lower compartment, but also had the effect of raising the fuel from the carbureter float chamber back into the vacuum tank lower chamber. This would, of course, very quickly starve and stop the engine. As soon as the engine had come to rest, the suction on the vent pipe would be relieved and the match would drop down and admit air in the proper manner. This would reestablish the gasoline flow and the carbureter float chamber would then fill. My theory may be wrong, but the fact remains that after the match was taken out there was no more trouble.—J. M. Fishback, Winchester, Ky.

(Mr. Fishback is to be congratulated upon having arrived at the happy solution of a very mysterious difficulty. Vacuum tank troubles, even the simpliest, are among the most difficult to find. We should be pleased to hear of other troubles experienced with these apparatus and the methods of detecting and remedying them.—ED.)

Mystery Tales

EVERYTHING is mysterious until it is explained and, by the same token, everything is simple and easily accounted for after the reasons are discovered. "The Strange Behavior of a Vacuum Tank" is a good one and we would have let the puzzle experts worry over it for awhile had we not thought that, possibly, some unfortunate might need the solution RIGHT NOW. Watch these columns. Your mystery may be solved in them. But don't wait. Send in the plot of your story and give some other mechanical sleuth a chance to use his gum shoes on it.

MYSTERY TALE
Engine Push Rods Wear Badly

Q—In working on a Continental 7 W engine recently, we found the No. 1 exhaust valve stems were worn badly, and also that the push rods and guides under these valves were worn so that they slapped from side to side and made an awful noise unless they were adjusted to .001 in. They were very dry while the other push rods were oily. Have you had any other complaints like this one and, if so, what would you suggest to overcome the trouble?—J. T. Henry, Wilmington, N. C.

This is the first complaint of the kind we have had on this engine. It is quite apparent that the push rods and guides are not getting lubrication. This may be caused by a failure of the oil distribution to No. 1 and 6 splash compartment or by some damage to the dippers on the bottoms of the connecting rods. Either of these causes would have the effect of seriously curtailing the amount of oil splashed to the push rods and guides. Fig. 10 is of a vertical section of the front end of the engine, showing that the No. 1 push rod and guide depend upon splash for lubrication.

(Other solutions of the mystery are solicited.—ED.)

MYSTERY TALE
Six Cylinder Engine Knocks Out Bearings

I believe that the trouble in this case is not having the bearings fitted right originally. This fitting is very hard to do unless the burning-in process is used. A very good remedy, I find, if one has no burning-in machine, is to tighten up on the bearings after about 100 miles of running. My experience with this engine is that it hammers the bearings out instead of wearing or burning them out. I have been led to believe that there are two reasons for the bearing's coming loose, one being wear in the shims and the other the normal seating of the bearings to the crank pin in running. As I have said, if the bearings are tightened after running-in and the shims examined, I think trouble will be remedied.—J. M. Fishback, Winchester, Ky.

MYSTERY TALE
What Is Wrong With This Ignition System?

Regarding the inquiry under the heading, "What Is Wrong With This Ignition System?" which appeared in the September 8 issue: I suspect the distributer cap as being the trouble. The inquirer states that the coil gives a good spark, which, when tested at the plugs, is sometimes weak. I had a similar trouble with an Atwater-Kent distributer and found that water or moisture, gathering on the inside and outside of the cap, would lead the current from the cap to the ground, thereby letting just a small amount get to the the plugs. I cleaned the distributer cap well but the results were the same. Then I inspected the cap carefully and found that the current during its former leakage had carbonized little streaks all over it. I installed a new cap and the trouble was at an end.—Maxwell Lewis, Greenvile, Ala.

(Mr. Lewis' explanation is plausible and certainly worth trying. Ed.)

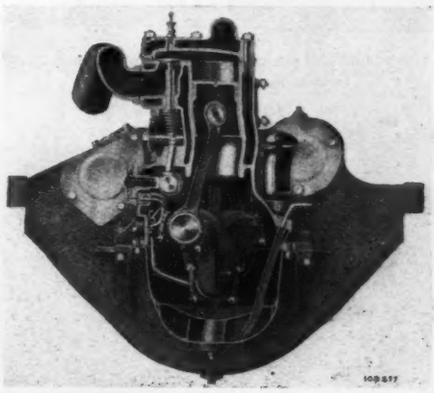


Fig. 10—Sectional view of a Continental 7 W. engine, showing how the push rods and guides are splash lubricated

The Accessory Show Case

New Fitments for the Car

AMCO ONE-WAY CHECK

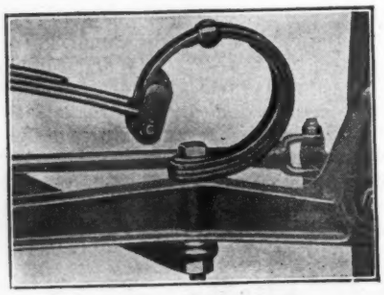
Amco checks are designed to prevent the car body from flinging violently up in the air on the rebound following deflection of the springs. This device consists mainly of a double wound coil spring fitting on a steel stud. This coil spring will turn freely in the direction of the winding, but movement in the opposite direction locks it instantly. Turning a small screw adjusts the leather faced brake to the weight of the car. One model fits all cars. Price, $36. American Metals Corp., Indianapolis.

K-E-M TERMINALS

These terminals make a clean workmanlike job at the end of any cable. No tools are needed. To apply, pull wire through the hole in the socket, divide the strands, twist them around the tapered lug and put on the cap. Furnished in 5, 7, 8 and 9 millimeter sizes for high and low tension. Packed 50 of one size only in a box. K-E-M Co., Inc., 474 Sterling place, Brooklyn, N. Y.

CLAMERT SPOTLIGHT

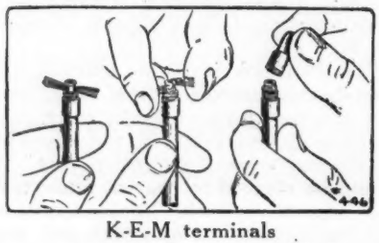
The Clamert spotlight has a glass reflector, and the focusing adjustment is on the outside. All parts can be replaced without the use of rivets or solder. The bracket fits eighty per cent of the cars made. The spotlight may be used as a trouble lamp by loosening two screws and removing them from the bracket. Price, $5. The Clamert Mfg. Co., Latrobe, Pa.



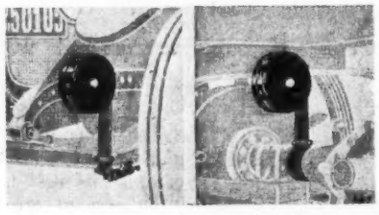
Grey Goose shock absorber attached to Ford front spring

New Era spring bumper

Arm rest for drivers



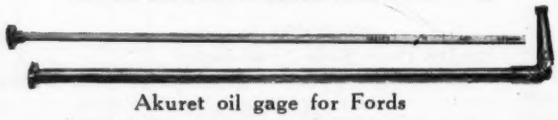
K-E-M terminals



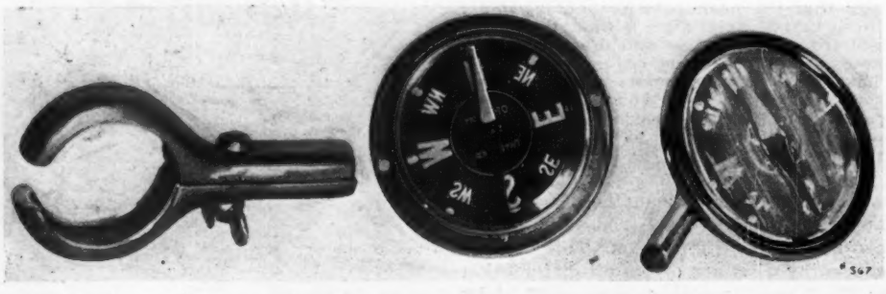
Amco one-way check

COMPASS FOR POINTING DIRECTION OF TRAVEL

By virtue of its design, the Noisom compass, when attached to the car with the radiator pointing north together with the needle, thereafter indicates the direction of travel, at a glance. It is attached to the top of the car and is read from its reflection in a mirror clamped to the dash or the steering post. O. P. Noisom, South Bend, Ind.



Akuret oil gage for Fords



The Noisom compass is attached to the top of the car and read from its reflection in a mirror attached to the steering post

GREY GOOSE SHOCK ABSORBER FOR FORDS

Grey Goose shock absorbers are made in two types, one for the front Ford springs and one for the rear. The design is curved leaf-pring of chrome-vanadium steel. The eyes are bushed, reamed and drilled for oil cups. A set of four can be applied in forty-five minutes, it is claimed. Price $10. Indiana Parts Co., Richmond, Ind.

AKURET OIL GAGE FOR FORDS

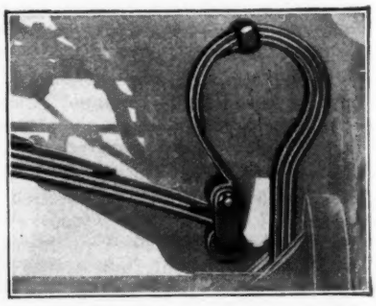
The Akuret oil gage is of the tube and rule type. It is attached to the lower petcock and extends through the splash above the right-hand running board where the handle of the gage can be reached without stooping. Price $2. Wallace Motor Products Co., 465 Washington st., New York.

NEW ERA SPRING BUMPERS

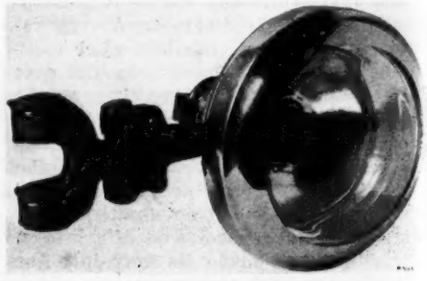
The Duplex spring bumper is made to fit practically every car, including Fords. The double-faced design affords protection from the single-faced bumper going over or under it. Prices, black, $20.; nickle and black, $22. New Era Spring Speciality Co., Grand Rapids, Mich.

ARM REST FOR DRIVER

The Arm Rest is a leather pad designed to be clamped on the side of the car body to allow the driver's elbow to be placed on it. A steel clamp fastens it securely to the body. Price, $4 each. Autobuoy Sales Co., 332 So. Michigan Ave., Chicago.



Grey Goose shock absorber attached to Ford rear spring



Clamert spotlight

Service Equipment

Time Savers for the Shop

R. & B. PUMP FOR DISPENSING GREASE FROM BARRELS

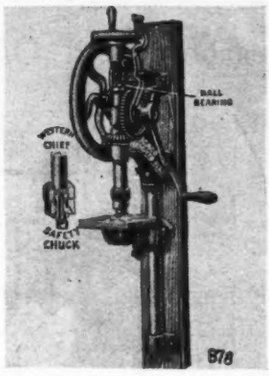
The R. & B. grease pump is adjustable to any size of barrel or drum and will discharge semi-fluid materials such as greases, oils, soaps and paints, completely emptying the container. The hose is eight feet long. The foot of the pump has a double port opening, one for discharge and one for suction. The valve opening and closing these ports is operated by a handle at the top of the discharge end of the pump attached to a small steel rod which passes through the discharge pipe to the valve in the foot of the pump. Price $35. Hermitage Auto & Pump Co., 1405 Broadway, Nashville, Tenn.

WEBER CONNECTING ROD MACHINE

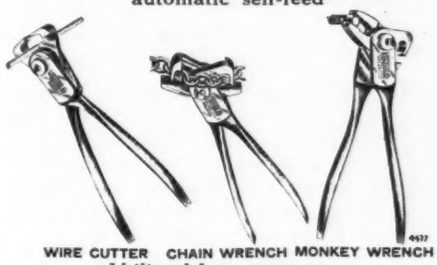
This is a precision machine adapted to the testing of connecting rods with or without pistons and to the pouring and boring of connecting rod bearings. It will pour and bore half main bearings, whether bronze back, steel back or die cast, and can be used for testing connecting rod alignment by means of a wrist pin against the parallel blocks when the piston is not available. The piston can be clamped endwise in this machine for reaming the wrist pin hole. This method of clamping prevents warping. Sawyer-Weber Tool Mfg. Co., 350 So. Alameda St., Los Angeles, Calif.

UTILITOOL HAS FIFTEEN DIFFERENT USES

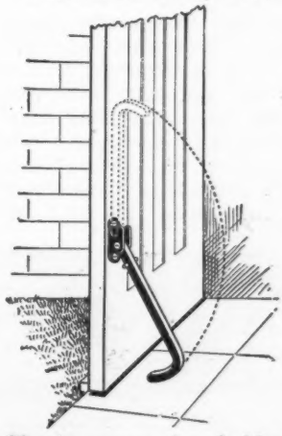
This tool may be put to a variety of uses, a few of which are those of a pipe wrench, staple puller, monkey wrench, cutter, chain wrench, screw driver, etc. It consists of seven parts, all of which are interchangeable and can be replaced if broken. Length, 9 in. Utilitool Co., 163 W. Washington street, Chicago



Canedy-Otto battery drill having automatic self-feed



Utilitool has many uses



Phenix garage door-holder

DRILL FOR BATTERY SERVICE STATIONS

This battery drill, designed for attachment to post or wall, has automatic self-feed and drills to the center of a 14 in. circle. The slotted table has an up and down run of 15½ in. to permit the drilling of extra high batteries. This drill is equipped with a pulley so that it can be run on power. The Cannedy-Otto Mfg. Co., Chicago Heights, Ill.

COMBINATION ARBOR PRESS, STRAIGHTENING AND TRUING MACHINE

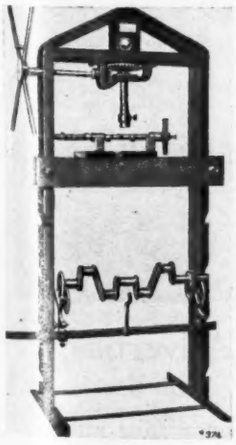
The cross channel of this press is welded into the frame. The frame is slotted, making the raising or lowering of the table very simple. The truing-up device consists of a pair of centers, one a dead center and the other a movable center held to the work by a coil spring, and a set of four disks, machined to run true. This arrangement can be used to true crankshafts, camshafts, differentials, etc. The press has a gong which rings when the screw is about to reach its limit. This automatic alarm consists of a two-piece pressure plate, two V blocks and a safety cap for the end of the screw. Made in two models, 50-ton and 30-ton. Pirce $135 and $98. Truing device, $15 extra. Naperville Machine Co., Naperville, Ill.

HANDY BOTTLE CARRIER FOR DISPENSING OIL

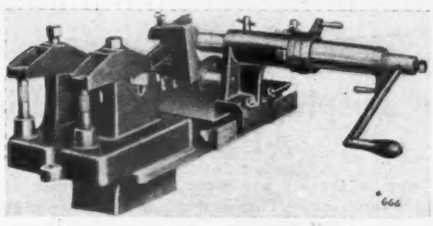
The Handy Oiler is a wire container for carrying eight bottles of oil to the car at the curbstone or in the garage, thus precluding the necessity of driving it to the pump. The bottles are easily filled and the long spout facilitates pouring into the crankcase or tank. The bottles afford an opportunity to keep an exact check on the oil sold at night or during the absence of the proprietor. Price complete, $8. Handy Oiler Co., Danville, Ind.

PHENIX GARAGE DOOR-HOLDER PREVENTS SLAMMING

This is a simple garage door-holder to keep the wind from slamming the door against the car when driving in or out. It can be turned up or down by hand or foot and automatically locks itself. It is effective on any kind of solid floor construction. Phenix Mfg. Co., Milwaukee, Wis.



Combination arbor press, straightening and truing machine



Sawyer-Weber connecting rod machine

The Handy Oiler container for carrying oil bottles

R. & B. pump for dispensing grease from barrels

Automotive Architecture

Planning & Building Problems

Conducted by Tom Wilder

Arranging Salesroom and Office in Garage

ADVICE ON YOUR NEW BUILDING PLAN

IN this department MOTOR AGE aims to assist its readers in their problems of planning, building and equipping service stations, garages, dealers' establishments, gas filling stations, and, in fact, any buildings necessary to automotive activity.

When making requests for assistance please see that we have all the data necessary to an intelligent handling of the job. Among other things, we need such information as follows:

Rough pencil sketch showing size and shape of plot and its relation to streets and alleys.

What departments are to be operated and how large it is expected they will be.

Number of cars it is expected to garage.

Number of men employed in repair-shop.

And how much of an accessory department is anticipated.

PLAN NO. 364

Q—We have bought an inside lot, 90 by 120 ft., on which a garage will be erected. We are puzzled over the arrangement and plan of the 30 by 40 ft. room on the front of the south 30 ft. lot.

In the garage there will be stored 19 cars on each side wall, leaving about a 30 ft. aisle in the center in which rows of cars, four abreast, can be arranged, facing front, when overcrowded. Should there be stall guides between each car for safety in backing into the stall?

In the 30 by 40 ft. room in front of the cinder yard will be space for three cars in the showroom. Main office, lavatories for employees and office adjoining small waiting room for ladies will be here. The heating plant will be under this room.

The garage arrangement suits us as it is. The law here provides that lavatories must be on outside walls.

Cars are to back into the oil room for air, gas and oil. In the rear will be installed an elevated runway for greasing, thus doing away with pits which we consider dangerous and obsolete.

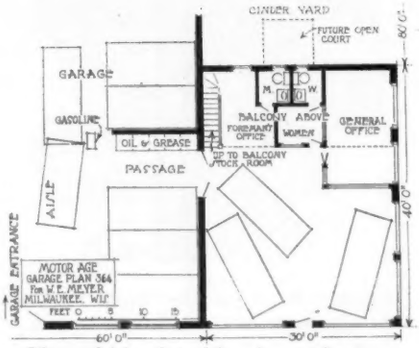
The washrack will be installed in the aisle in the rear of the building.

Will you kindly help the cause along and give us a satisfactory arrangement of this salesroom and office?—W. E. Meyer, Milwaukee, Wis.

It is practically impossible to get as much into a space 30 by 40 ft. as you suggest. As you will see from our layout, the three cars take about half of the space, unless they are packed in like sardines.

Rather than cut everything down so small as to be impractical, why not cut down the ceiling height at the rear and put the stockroom above.

The arrangement we show for oil, grease and gasoline is much better than your suggestion of backing into a small



Plan 364—Suitable for salesroom and office

room, because first, it affords a passage into the office which would have to be reserved for the cars to back in, second, it makes gasoline and oil much more handy which will increase your sales, and third, it greatly relieves the tax on your 30 ft. by 40 ft. space.

Air would best be supplied from hose hung down in the center of the garage not too near the gasoline pump. You have such ample aisle space that a car could stand in the middle of the aisle getting air and other cars could pass on either side. The hose could either be controlled by a weight or on a reel.

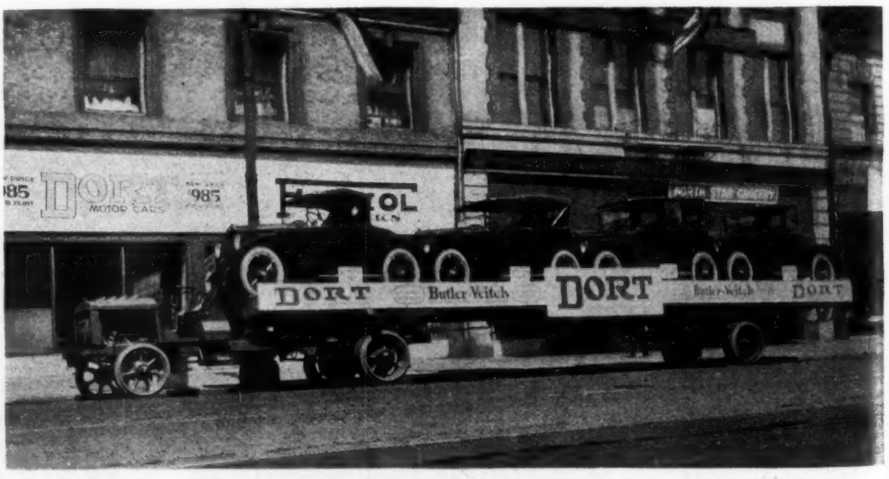
The matter of guides between car stalls is principally a matter of taste; unless the spaces are very liberal, a guide will not protect a car from another having an extensive overhead—such as trunks, double tire carriers, bumpers, etc. They do, however, give a place an up-to-date appearance.

In respect to the outside walls for lavatories; in case you build on the proposed cinder yard, an open court could be left, as indicated; we think this is permissable though it might be safe to find out definitely before proceeding.

You are quite right about pits; they are dangerous, seldom used, and occupy a space that can never be used for other purposes. A good creeper is just as convenient, can be used anywhere and takes up no space. A runway is a good thing if you are able to use it a great deal; otherwise it may be an elephant on your hands. Better make sure you have use enough to make it pay.

PLANS GREAT GREENVILLE CONVENTION

Columbia, S. C., Sept. 24—H. Lee Harvey, president of the South Carolina Automotive Assn., announces that plans are being made to make the annual convention at Greenville one of unusual interest. The convention is to be held in December. Ray W. Sherman, A. E. A. merchandising director, already has accepted an invitation to be present, and it is hoped also to have Alfred Reeves, general manager N. A. C. C., present.



Traveling Display of Complete Line Advertises Effectively

A motor truck and a trailer are now carrying four Dort automobiles around the streets of San Francisco. This is a most effective method of motor car advertising, planned by the Butler-Veitch Co., Dort distributor. The four automobiles are supported on two heavy timbers, one end resting on the trailer and the other on the truck

Carbureter Equipment on 1921 Passenger Cars

Motor Age Maintenance Data Sheet No. 171

One of a series of weekly pages of information valuable to service men and dealers—save this page

Car and Model	Make of Carbureter	Model of Carbureter	Size of Carbureter	Type of Carbureter Connection
Ace, G	Special	G	1¼	Side Outlet
Allen, 43	Stromberg	M.1	1	Top Outlet
American, C	Stromberg	L.B.2	1¼	Side Outlet
Anderson, 40	Rayfield	G.L.3	1¼	Side Outlet
Apperson, 8-21	Johnson	A	1¼	Top Outlet
Auburn, 6-39	Rayfield	L-3P	1¼	Top Outlet
Beggs, 20T	Stromberg	L.S.2	1¼	Side Outlet
Bour-Davis, 21-5	Zenith	H.P.5A	1¼	Side Outlet
Brewster, 91	Zenith	L.6, B	1½	Top Outlet
Briscoe, 4-34	Scoe	.....	1	Top Outlet
Buick, 1921	Marvel	E	1¼	Top Outlet
Cadillac, 59	Own	Fixed Jet	1½	Top Outlet
Case, V	Rayfield	M.3	1¼	Top Outlet
Chalmers, 6-30	Stromberg	L2	1¼	Top Outlet
Champion, Special	Zenith	.....	1	Top Outlet
Chandler, Six	Rayfield	G-3P	1¼	Top Outlet
Chevrolet, 490	Zenith	O-4	1½	Top Outlet
Chevrolet, FB	Zenith	O-4	1½	Top Outlet
Cleveland, 40	Stromberg	M.B.1	1	Side Outlet
Climber, S-6	Stromberg	O.S.1	1¼	Top Outlet
Cole, 870	Johnson	12M	1½	Top Outlet
Columbia Six	Stromberg	L.S.2	1¼	Top Outlet
Comet	Stromberg	L.B.2	1¼	Side Outlet
Commonwealth, 44	Carter	L	1	Top Outlet
Crawford, 21-6-40	Stromberg	L.B.2	1¼	Side Outlet
Crow-Elkhart, L-53-56	Zenith	O-4	⅞	Top Outlet
Crow-Elkhart, H-53-56	Zenith	H-F-4-S	.....	Side Outlet
Cunningham, V-4	Stromberg	O-3	1½	Top Outlet
Daniels, D-19	Zenith	O-D-5	1¼	Top Outlet
Davis, 51	Stromberg	L-S-2	1¼	Top Outlet
Dixie Flyer, H-S-70	Stromberg	M-B-1	1	Side Outlet
Dodge Brothers	Stewart	25	1⅛	Side Outlet
Dorris, 6-80	Stromberg	L-3	1½	Top Outlet
Dort, 17-A	Carter	L	1	Top Outlet
Dupont, A	Yale & Towne	Swan	1½	.....
Elcar, 7-R	Stromberg	L-2	1¼	Top Outlet
Elgin Six, K	Stromberg	L-B-1	1	Side Outlet
Essex, A	Own	.....	1⅛	Side Outlet
Ferris	Zenith	H-P-5-A	1¼	Top Outlet
Ford, T	Holley	H	1	Side Outlet
Franklin, G-B	Own	G-B	1	Top Outlet
Friend Four	Stromberg	L-B	1	Side Outlet
Gardner, G	Carter	L	1	Top Outlet
Globe, B-10	Stromberg	.....	.....	.....
Grant Six	Stromberg	L-1	1	Top Outlet
Halliday, 21	Stromberg	.....	.....	.....
Hanson Six, 60	Marvel	H-2	1¼	Top Outlet
Harroun, A-A-2	Stromberg	M-1	1	Top Outlet
Hatfield, A-42	Zenith	H-P	1¼	Side Outlet
Haynes, 47	Rayfield	M-3	1¼	Side Outlet
H. C. S. 3	Stromberg	O	1¼	Top Outlet
Holmes, 4	Stromberg	O	1	Top Outlet
Hudson Super Six	Own	Hudson	1½	Top Outlet
Hupmobile, R	Stromberg	M-1	1	Top Outlet
Jackson, 6-38	Stromberg	L-N-2	1¼	Top Outlet
Jordan, M	Stromberg	Own	1½	Top Outlet
Kenworthy, 8-90	Stromberg	Own	1½	Side Outlet
King, H	Ball & Ball	.....	1⅛	Top Outlet
Kissel, 45	Stromberg	L-B-2	1¼	Side Outlet
Kline Kar, 6-55-K	Rayfield	L-3-P	1¼	Top Outlet
Kurtz Automatic, A	Zenith	.....	1¼	Side Outlet
LaFayette, 134	Own	6143	2	Top Outlet
Leach, 21-A, B & C	Rayfield	3-M-V	1¼	Side Outlet
Lexington, Series S	Rayfield	L-3-P	1¼	Top Outlet
Lexington, Series T	Rayfield	.....	1½	Side Outlet

(Continued next week)

MAKERS MAY STANDARDIZE CLUTCH FACINGS

THE Transmission Division of the Society of Automotive Engineers standards committee, has submitted a preliminary recommendation for S. A. E. clutch facing standards, based on present practice.

It is believed advisable to divide the facing sizes into two divisions—one for single plate and the other for multiple-plate clutches. The majority of single-plate clutches seems to be made in three sizes, 8, 10 and 12 in., and in view of the fact that they are quite similar in design and are housed by flywheels bored 8, 10 and 12 in., respectively, it would appear that a standard inside and outside diameter can be agreed upon without running into much opposition from the clutch makers, as these sizes will fit into their present clutches without any change in the design of the clutch parts.

A great number of multiple-disk clutches on the market are so varied in design that it makes the question of standard facing sizes for this type somewhat more difficult than in the single-plate clutch. It is believed that the many sizes of facings now used can be reduced to a comparatively few.

AUTOMOBILE THEFT PREVENTION WORK OF S. A. E.

IT is generally recognized that one of the most effective ways of identifying stolen automobiles and minimizing the danger of their being stolen would be the general adoption of a method of numbering engines which would make it impossible to change the numbers without leaving indications that a change had been made.

Replies to a letter from the Society of Automotive Engineers standards department, soliciting advice from automobile manufacturers on this problem, indicated that the stamping of plain characters on several parts of the engine and other units of the chassis is the most satisfactory way of guarding against having the numbers changed by automobile thieves.

It is realized, however, that if a simple means of numbering cast-iron or aluminum castings can be discovered which will make it difficult for the numbers to be changed, it will be a real solution to this problem.

The suggestion has been made to the S. A. E. that a solution might be found by the casting of a special alloy block in the surface of that part of the engine casting which is to be numbered, the composition of the alloy being such that it would be impossible to change the numbers by any simple means. The selection of such a material would depend, of course, upon its physical characteristics.

Specifications of Current Passenger Car Models

NAME AND MODEL	Engine Make	Cylinders, Bore and Stroke	WB	Tires	2-Pass.	5-Pass.	7-Pass.	Coupe	Sedan
Ace.....G	Guy..	6-3¼x5	123	32x4	$2975	$2975	....	$3680	$3680
Ace.....H	H-S..	6-3⅝x5	123	32x4	2975	2975	....	3680	3680
Ace.....L	H-S..	4-3¼x5	116	32x4	2260	2260	....	....	....
Allen.....Series 43	Own..	4-3½x5	110	32x4	1195	1195	....	....	1845
Ambassador.....R	Cont..	6-3⅜x5¼	136	33x5	....	†4500	$4500	....	6500
American.....C	H-S..	6-3¼x5	127	32x4	2195	2195	†2350	....	3150
Anderson.....Series 40	Cont..	6-3¼x4½	120	32x4	2195	1650	‡1795	2450	2550
Apperson. 8-21-S	Own..	8-3¼x5	130	34x4½	....	3000	3250	4500	4500
Apperson...Anniversary	Own..	8-3¼x5	130	34x4½	....	3500	3750	....	....
Auburn.....6-51	Cont..	6-3¼x4½	121	32x4	167	1695	1760	2475	2495
Beggs.....20T	Cont..	6-3¼x4½	120	33x4	1775	1775	....	2675	2775
Bell.....4-32	H-S..	4-3½x5	114	31x4	....	1495	....	....	....
Bell.....6-59	H-S..	6-3¼x5	124	32x4	....	1665	....	....	....
Biddle.....B1	Budd..	4-3¾x5⅛	121	32x4	3475	3475	....	4750	....
Birch Super-Four	H-S..	4-3½x5	117	33x4	1195	1195	†1245	....	1795
Birch Light Four	LeR..	4-3⅛x4½	108	30x3½	995	995	....	....	....
Birch Light Six	H-S..	6-3¼x5	117	33x4	1395	1395	†1445	....	1995
Bour-Davis.....21S	Cont..	6-3½x5¼	126	33x4½	†2385	†2365	2365	....	....
Brewster.....91	Own..	4-4 x5½	125	32x4½	‡7000	7000	....	....	10500
Briscoe.....4-34	Own..	4-3⅜x5	109	31x4	1085	1065	....	1685	1685
Buick..1922-31-35-35-37	Own..	4-3⅜x4¾	109	31x4	935	975	....	1475	1650
Buick.....1922-41-5-6-7	Own..	6-3⅜x4½	118	33x4§	1495	1525	....	2135	2435
Buick.....1922-48-9-50	Own..	6-3⅜x4½	124	31x4½	....	....	1735	2325	2635
Bush.....E.C.4	Lyc..	4-3½x5	116	33x4	....	1195	....	....	....
Bush.....E.C.6	Rut..	6-3½x5	116	33x4	....	1345	....	1750	1850
Cadillac.....61	Own..	8-3½x5¼	132	33x5	3790	3790	3940	4340	4950
Case.....V	Cont..	6-3½x5¼	126	34x4½	....	†2250	2250	2900	3285
Chalmers.....6-30	Own..	6-3¼x4½	117	32x4	1495	1545	....	2295	2445
Chalmers.....6-30	Own..	6-3¼x4½	122	33x4½	....	....	1645	....	....
Champion.....Tourist	Lyc..	4-3½x5	113	32x3½	†1050	995	....	....	....
Champion.....Special	H-S..	4-3½x5	118	32x4	†1295	1295	....	....	....
Chandler.....Six	Own..	6-3½x5	123	33x4	1785	†1795	1785	2785	2885
Chevrolet.....490	Own..	4-3½x4	102	30x3½	525	525	....	875	875
Chevrolet.....FB	Own..	4-3½x5¼	110	32x4	975	975	....	1575	1575
Cleveland.....40	Own..	6-3 x4½	112	32x4	1295	1295	....	2195	2295
Climber Four	H-S..	4-3½x5	115	33x4	1450	1385	....	....	....
Climber Six.....S	H-S..	6-3¼x5	125½	32x4½	2250	2250	....	....	....
Cole.....870	Nort..	8-3½x4½	127	33x5	2550	†2695	2795	3695	3995
Columbia Challenger	Rut..	6-3½x5	115	32x4	....	1195	....	†1995	1995
Columbia.....D-C&CS	Cont..	6-3¼x4½	115	32x4	1475	1475	†1475	†2295	2350
Comet.....C-53	Cont..	6-3½x5¼	125	33x4½	....	2350	2450	....	3650
Commonwealth.....44	H-S..	4-3½x5	117	32x4	....	1395	....	....	2465
Crawford.....21-6-40	Cont..	6-3½x5¼	122½	32x4	3000	3000	3000	....	4500
Crow-Elkhart....L63-65	Lyc..	4-3½x5	117	32x3½	†1295	1295	....	....	....
Crow-Elkhart....S63-65	H-S..	6-3¼x5	117	33x4	†1545	1545	....	....	2395
Daniels.....D-19	Own..	8-3½x5¼	132	34x4¼	†5350	†5350	5350	6250	6950
Davis.....61-67	Cont..	6-3¼x4½	120	32x4	†1995	1695	....	2795	2795
Dispatch	Wisc..	4-3¾x5	120	34x4	1250	1350	1350	1525	1575
Dixie Flyer.....H-S-70	H-S..	4-3½x5	112	32x4	1445	1445	1945	2295	2345
Dodge Brothers	Own..	4-3⅞x4½	114	32x4	935	985	....	1585	1785
Dorris.....6-80	Own..	6-4 x5	132	33x5	....	†4785	4785	5800	6690
Dort.....17-12	D-Ly.	4-3½x5	108	31x4	985	965	....	1535	1685
Driggs	Own..	4-2⅝x4½	104	30x3½	1275	1275	....	....	1975
Du Pont.....A	Own..	4-3⅛x5½	124	32x4½	3400	†3400	....	....	4900
Durant.....A-22	Cont..	4-3½x4¼	109	31x4	....	890	....	1365	1365
Elcar.....K-4	Lyc..	4-3½x5	117	33x4	†1145	1145	‡1195	1545	1645
Elcar.....7-R	Cont..	6-3¼x4½	117	33x4	†1595	1595	‡1595	2395	2495
Elgin.....K-1	Falls..	6-3½x4¼	118	33x4	1595	1495	†1595	2395	2395
Essex	Own..	4-3⅜x5	108½	32x4	1375	1375	....	1880	2230
Fergus.....S-5-21	Own..	6-3¼x5	126	33x4½	....	Chassis Price		6500	....
Ferris.....C-20	Cont..	6-3½x5¼	130	32x4½	2695	*2595			3695
Ford.....T	Own..	4-3⅜x4	100	30x3½	**325	††355	....	595	660
Franklin.....9-B	Own..	6-3¼x4	115	32x4	2300	2350	....	2650	3350
Gardner.....G	Lyc..	4-3½x5	112	32x3½	‡995	995	....	....	1795
Grant.....Six	Own..	6-3½x4½	116	32x4	1550	1550	....	2450	2450
H.C.S.	Weid..	4-3⅝x5½	120	32x4½	2725	†2775	....	3450	3650
Halladay, Manh. Special	Rut..	6-3½x5	118	33x4	....	1505	....	....	....
Halladay, Craft Special	Rut..	6-3½x5	123	33x4	....	2195	....	....	....
Handley-Knight	Kn'ht.	4-4½x4½	125	32x4½	....	....	2850	....	4185
Hanson Six.....60	Cont..	6-3¼x4½	121	32x4	1795	1795	1995	†2775	2885
Harroun.....A-A-2	Own..	4-3¼x5¼	106	30x3½	....	1195	....	....	....
Hartfield.....A-42	H-S..	4-3½x5	115	32x4	†1495	1495	....	....	2395
Haynes.....75	Own..	6-3½x5⅝	132	34x4½	2685	†2485	2485	....	3485
Haynes.....55	Own..	6-3½x5	121	3x4	1835	1785	....	....	2835
Haynes.....48	Own..	12-2¾x5	132	34x4½	4200	3635	3635	....	4950
Holmes.....Series 4	Own..	6-3½x4¼	126	34x4½	†2950	....	2950	3850	4150
Hudson Super 6	Own..	6-3½x5	126	34x4½	†1895	....	1895	2770	2895
Huffman.....R	Cont..	6-3¼x4½	120	32x4	1845	1795	....	....	2795
Hupmobile.....Series R	Own..	4-3¼x4	112	32x4	1485	1485	....	2200	2250
Jackson.....638	Cont..	6-3¼x4½	121	32x4½	†2285	1635	....	2985	2985
Jordan.....M	Cont..	6-3¼x4½	120	32x4	2250	2250	....	3300	3300
Jordan.....F	Cont..	6-3½x5¼	127	32x4½	....	....	2475	....	3700
Kenworthy.....8-90	Own..	8-3 x5¼	130	32x4½	5000	5000	5250	6000	6000
Kessler.....K	Own..	4-3⅜x3¾	117	32x4	....	1995	....	....	2445
King 8.....J	Own..	8-3 x5	120	32x4½	2140	†2125	*2125	3125	3235
Kissel.....45	Own..	6-3½x5½	124	32x4½	2975	†2975	2475	†3775	*3775
Kline Kar.....6-55-K	Cont..	6-3¼x4½	121	33x4	2090	2090	2090	3250	3290
Kurtz Automatic.....A	H-S..	6-3¼x5	122	32x4	....	2050	....	....	3000
LaFayette.....134	Own..	8-3¼x5¼	132	33x5	4850	4850	4850	6250	6500
Leach	Own..	6-3½x5¼	134	32x4	6500	6500	....	....	....
Lexington.....Series S	Cont..	6-3¼x4½	122	32x4	....	1885	....	2750	3150
Lexington.....Series T	Anst..	6-3¼x4½	128	32x4½			2785	....	3750
Liberty.....10-C	Own..	6-3⅜x5	117	32x4	1595	1595	†1675	2400	2495
Lincoln	Own..	8-3⅜x5	136	33x5	†4300	4600	4300	4950	5400
Locomobile	Own..	6-4½x5½	142	35x5	....	†8600	8600	....	....
Maibohm.....B	Falls..	6-3½x4¼	116	32x4	‡1575	$1575	†1750	$2395	$2395
Marmon.....34	Own..	6-3⅜x5⅛	136	32x4½	4185	†3985	3985	4675	5275
Maxwell.....25	Own..	4-3⅜x4½	109	30x3½	845	845	....	1445	1545
McFarlan.....1921	Own..	6-4½x6	140	33x5	6300	†6300	6300	7500	7500
Mercer.....Series 5	Own..	4-3¾x6¾	132	32x4½	3950	†3950	*3950	4850	5250
Merit	Cont..	6-3¾x4½	119	32x4	1985	1985	....	....	....
Meteor.....R & RR	Dues..	4-4½x6	129	32x4½	5500	5500	....	....	....
Metz.....M6	Rut..	6-3½x5	120	32x4	1995	1995	....	2795	2895
Mitchell.....F-40	Own..	6-3½x5	120	32x4		†1790	....	....	....
Mitchell.....F-40	Own..	6-3½x5	120	33x4	‡1490	1490	....	....	....
Mitchell.....F-42	Own..	6-3½x5	127	33x4	....	....	1795	....	....
Mitchell.....F-45	Own..	6-3½x5	120	33x4	....	....	....	2290	2440
Moller.....A	Own..	4-2¾x4	100	27x3½	2000	....	....	....	....
Monroe.....S-9 & 10	Own..	4-3½x4½	115	32x3½	1285	1295	....	....	....
Monroe.....S-11 & 12	Own..	4-3½x4½	115	33x4				2075	2175
Moon.....6-48	Cont..	6-3½x4½	122	32x4	1785	1785	2285	2785	2785
Moon.....6-68	Cont..	6-3½x5¼	125	32x4½	....	....	2285	....	....
Murray-Mac Six	Own..	6-3½x5¼	128	34x4½	4250	4250	4250	....	....
Nash.....681-7	Own..	6-3¼x5	121	33x4	1525	1545	†1695	2395	2695
Nash.....682	Own..	6-3½x5	127	34x4½	....	....	1695	....	....
Nash Four.....41-4	Own..	4-3½x5	112	32x3½	1175	1195	....	1735	1935
National Sextet.....BB	Own..	6-3½x5¼	130	32x4½	2090	†2990	2990	3690	3990
Nelson.....D	Own..	4-3½x4¾	104	32x4	....	1750	....	....	....
Noma.....1C	Cont..	6-3¼x4½	128	32x4½	2800	†2850	*3200	....	3700
Norwalk.....430-KS	Lyc..	4-3½x5	116	32x3½	....	1035	....	....	....
Oakland.....34-D	Own..	6-2½x4¾	115	32x4	1095	1145	†1265	1625	1725
Ogren.....6-60	Own..	6-3½x5½	134	33x5	†3850	3750	3900	5000	5400
Oldsmobile.....43-A	Own..	4-3⅛x5½	115	32x4	†1145	1145	....	1645	1845
Oldsmobile.....37-A	Own..	6-2⅝x4¾	112	32x4	†1450	1450	....	2145	2145
Oldsmobile.....46	Own..	8-2⅝x4¾	122	33x4½	....	††1725	1735	....	2635
Oldsmobile.....47	Own..	8-2⅝x4½	115	32x4	1625	††1625	....	2185	2425
Overland.....4	Own..	4-3⅜x4	100	30x3½	595	595	....	850	895
Packard.....Single-Six	Own..	6-3⅜x4½	116	33x4½	2975	2975	....	3650	3975
Packard.....Twin Six	Own..	12-3 x5	136	35x5	4850	*4850	4850	6000	6800
Paige.....6-44	Own..	6-3½x5	119	32x4	1625	1635	....	2450	2570
Paige.....6-66	Cont..	6-3⅜x5	131	33x4½	†2975	‡3295	2975	3755	3830
Pan American.....6-55	H-S..	6-3⅜x5	121	33x4	2000	2000	2100	....	....
Parenti.....1921	Own..	8-2⅝x4½	125	32x4	2000	2000	....	....	3000
Paterson.....650	Cont..	6-3⅜x4½	120	33x4	....	1595	1695	2695	2695
Peerless.....56-S-7	Own..	8-3⅜x5	125	34x4½	....	2850	2850	3200	3790
Piedmont.....4-30	Lyc..	4-3½x5	116	32x3½	....	970	....	....	....
Piedmont.....6-40	Cort..	6-3⅜x4½	122	32x4	....	1285	....	....	....
Pierce-Arrow	Own..	6-4 x5½	128	32x5	7000	†6800	6800	8000	8500
Pilot.....6-45	Teetor	6-3½x5	120	32x4	1945	1895	....	....	....
Pilot.....6-50	H-S..	6-3½x5	126	32x4½	2285	2285	2285	3350	3400
Porter.....40	Own..	4-4⅛x6¾	142	35x5	6750	Chassis Price			
Premier.....6-D	Own..	6-3⅜x5½	126⅜	32x5	3790	†3690	3800	4690	5190
Premocar.....6-40 A	Falls..	6-3½x4¼	117	32x4	1295	1295	....	1945	1995
Raleigh.....A-6-60	H-S..	6-3½x5	122	32x4½	2250	2250	....	3100	3200
R & V Knight.....R	Cwn..	4-3⅜x5	116	32x4	....	1500	....	2650	2750
R & V Knight.....J	Cwn..	6-3½x5½	127	32x4½	3350	†3350	3350	4000	4200
Reo Series A.....T-6	Own..	6-3⅜x5	120	33x4	1650	1650	....	2700	2750
ReVere.....C	Dues..	4-4½x6	131	32x4½	4850	4650	†4650	....	6500
Roamer.....6-54-E	Cont..	6-3½x5½	128	32x4½	2750	†2485	2750	†3650	3650
Roamer.....4-75-E	Dues..	4-4½x6	128	32x4½	3850	3650	....	....	....
Rolls-Royce	Cwn..	6-4½x4¾	143½	33x5	U. S.	Chassis Price		11750	....
Romer	Cont..	6-3½x4½	120	33x4	2000	2000	2100	2450	2750
Saxon.....125	Own..	4-3½x5	112	32x4	1345	1495	....	1995	1995
Sayers Six.....DP	Cont..	6-3½x4½	118	33x4	1795	1795	....	....	2995
Scripps-Booth...B-39-42	Nort..	6-2¾x4¾	115	32x4	‡1275	1495	....	1950	2100
Scripps-Booth...F-43-46	Cont..	6-3¼x4½	115	32x4	1470	1490	....	2350	2375
Seneca.....L & O	LeR..	4-3½x4½	108	30x3½	1045	1045	....	....	....
Severin.....Six	Cont..	6-3½x5¼	122½	33x4½	1485	1485	....	2100	2250
Severin.....Six	Cont..	6-3½x5¼	122½	33x5	2550	2550	2550	3250	3350
Skelton.....35	Lyc..	4-3½x5	112	32x3½	995	995	....	....	....
Southern Six.....660-2	H-S..	6-3½x5	127	32x4½	2375	2375	2395	....	....
Standard.....J	Own..	8-3½x5	127	34x4½	3400	†3400	3400	4500	4800
Stanley Steamer	Own..	2-4 x5	130	34x4½	2800	2600	2600	3775	3850
Stanwood Six	Cont..	6-3½x4½	118	33x4	2050	2050	....	2950	....
Stearns.....SKL4	Own..	4-3⅜x5½	125	34x4½	2450	2450	2675	3400	3700
Stephens.....90	Own..	6-3½x4½	122	33x4½	1800	†1850	1850	2850	2850
Stevens-Duryea.....E	Own..	6-4⅞x5½	138	35x5	7250	†6900	6800	9500	9900
Studebaker.....EJ-40	Own..	6-3½x4½	112	32x4	1125	1150	....	1550	1850
Studebaker.....E11-50	Own..	6-3½x5	119	32x4	1585	1635	†1635	2450	2550
Studebaker.....EG-60	Own..	6-3⅞x5	126	33x4½	....	....	1985	2850	2950
Stutz	Own..	4-4⅜x6	130	32x4½	3250	†3350	*3350	4800	....
Templar.....A-445	Own..	4-3⅜x5½	118	32x4	1985	1985	....	2785	2785
Texan.....A-38	Lyc..	4-3½x5	115	33x4	1195	1195	....	....	....
Texan.....C-12	H-S..	4-3½x5	115	33x4	1350	1350	....	....	....
Tulsa.....E-1-2-3	H-S..	4-3½x5	117	33x4	1175	1175	....	....	....
Tulsa.....F-1	H-S..	6-3½x5	119	33x4	1585	1585	....	....	....
Velie.....48	Cont..	6-3½x4½	115	32x4	1585	1585	†1800	2485	2485
Velie.....34	Falls..	6-3½x4½	112	32x3½	1385	1385	....	....	2085
Vogue.....6-55	H-S..	6-3½x5	124	32x4	....	1885	1960	2785	2885
Vogue.....6-66	Cont..	6-3½x5½	124	33x4½	....	2085	2160	2885	2985
Washington	Falls..	6-3½x4½	116	32x4	....	1785	....	....	....
Westcott.....C-48	Cont..	6-3½x5½	125	32x4½	....	2060	2090	....	3490
Westcott.....C-38	Cont..	6-3½x4½	118	33x4	1890	1890	†1990	2890	2890
Wharton.....A	Curt..	8-4 x5	136	34x4½	....	†4885	4885	....	....
Wills Sainte Claire.....	Own..	8-3¼x4	121	32x4½	2875	2875	....	3750	4100
Willys-Knight.....20	Own..	4-3⅝x4½	118	33x4	1475	1525	....	2195	2295
Winther.....61	H-S..	6-3¼x5	120	32x4½	....	....	2750	....	....
Winton.....25	Own..	6-3⅜x5½	132	35x5	4600	†4975	4600	5950	†5950

*—6-passenger. †—4-passenger. ‡—3-passenger. **—Price without starter and demountable rims. Price with starter and demountable rims $420. ††—Price without starter and demountable rims. Price with starter and demountable rims $450.

Engine Make: Anst.—Ansted. Cont—Continental. Curt—Curtiss. D.Ly—Dort. Lycoming. Dues.—Duesenberg. H-S—Herschell-Stillman. LeR—Leroy. Lyc—Lycoming. Nort—Northway. Roch—Rochester. Rut—Rutenberg. Weid—Weidely. Wisc—Wisconsin.

§Model 47—34 x 4½ Tires.

Specifications of Current Motor Truck Models

NAME AND MODEL	Tons Capacity	Chassis Price	Bore and Stroke	TIRES Front	TIRES Rear	Final Drive
Acason	¾	$1650§	3¾x5	34x5†	34x5†	W
Acason, R	1	2260	3¾x5½	36x3½	36x5	W
Acason, RB	1½	2485	3¾x5½	36x3½	36x6	W
Acason, H	2½	3295	4½x5¾	36x4*	36x8*	W
Acason, L	3½	4295	4½x5¾	36x5*	36x10*	W
Acason, M	5	5250	5 x6¼	36x6	40x12	W
Ace, C	1½	2295	3¾x5½	34x3½*	34x5*	W
Ace, A	2½	2795	4¼x5½	36x4*	36x7	W
Acme, G	¾	....	3¾x5	35x5†	35x5†	W
Acme, B	1½	....	3¾x5	34x3½	34x5	W
Acme, F	1½	....	3¾x5	34x3½	34x5	W
Acme, A	2	....	4½x5¼	36x4	36x7	W
Acme, AC	2½	....	4½x5½	36x4	36x7*	W
Acme, C	3½	....	4½x5½	36x5	40x10	W
Acme, E	5	....	4¾x6	36x6	40x12	W
Akr'Mnulti-Trk20	1	1995	4 x5¼	34x5	34x5	B
American, 25	2½	3350	4 x6	36x4*	36x4d*	W
American, 40	4	4275	4½x6	36x5*	36x5d*	W
Apex, G	1	1450††	3½x5	33x5†	33x5†	I
Apex, D	1½	1915	3¾x5⅛	34x3½	34x4	I
Apex, E	2½	2695	4¼x5½	36x4	36x7	I
Apex, F	3½	3975	4½x6	36x5	36x10	I
Armleder, 20	1	....	3¾x5¼	34x3½*	34x5*	W
Armleder, HW	2½	....	4¼x5½	36x4*	36x7*	W
Armleder, KW	3½	....	4½x6	36x5	36x5d	W
Atco, B	1½	....	3¾x5¼	34x5†	36x6†	W
Atco, B1	1½	....	3¾x5¼	34x5†	36x6†	I
Atco, A	2½	....	4¼x5½	36x4†	36x8*	W
Atlas, M.D.	1	1550	3½x5	32x4½†	32x4½†	W
Atterbury, 20R	1½	2475	3¾x5	34x3½	34x5	W
Atterbury, 7CX	2½	3175	4½x5¼	36x4	36x4d	W
Atterbury, 7D	3½	3975	4½x5½	36x5	40x5d	W
Atterbury, 8E	5	5125	4¾x6	36x5	40x6d	W
Autocar, 21UF	1½-2	2300	4¾x4½	34x4*	34x5*	D
Autocar, 21UG	1½-2	2400	4¾x4½	34x4*	34x5*	D
Autocar, 26Y	....	4350	4¼x5½	34x6	36x12	D
Autocar, 26-B	....	4500	4¼x5½	34x6	36x12	D
Available, H1½	1½	2475	4 x5⅛	36x3½*	36x5*	W
Available, H2	2	2775	4 x5⅛	36x3½*	36x6*	W
Available, H2½	2½	3475	4 x5⅛	36x4*	36x8*	W
Available, H3½	3½	4475	4½x5½	36x5	40x5d	W
Available, H5	5	5375	4¾x6	36x6	40x12	W
Available, H7	7	6000	5 x6	36x6	40x14	B
Avery	1	....	3 x4	34x5†	34x5†	I
Beck, A Jr.	1	1950	3¾x5	34x3½	34x4	I
Beck, C	2	2550	4½x5½	36x4	36x6	I
Bell, M	1	1495	3¾x5⅛	35x5	35x5†	W
Bell, E	1½	2100	3¾x5¼	34x3½	34x5†	W
Bell, O	2½	2550	4½x5½	34x4	34x6	D
Belmont, D	2	2675	3¾x5	34x3½*	34x6*	D
Belmont, F	3½	3525	4 x6	36x5*	36x5d*	D
Bessemer, G	1	1395	3½x5	35x5†	35x5†	I
Bessemer, H-2	1½	1995	3¾x5	36x3½	36x5	I
Bessemer, J-2	2½	2595	4¼x5¼	36x4	36x4d	I
Bessemer, K-2	4	3495	4½x5½	36x5	36x10	I
Bethlehem, K	1	....	3½x5	34x4½†	35x5	I
Bethlehem, G	2	....	4 x5¼	34x3½*	34x6*	I
Bethlehem, H	3	....	4 x5¼	36x4*	36x8	I
Bethlehem, J	4	....	4½x5½	36x5*	36x5d*	I
Bridgeport, A	1½	2350	3¾x5¼	34x3	34x6	W
Bridgeport, B	2½	2850	4½x5½	36x4*	36x7*	W
Bridgeport, C	3½	3850	4½x6	36x5	36x5d	W
Brinton, F	2½	3400	4½x5¼	36x4	36x7	W
Brockway, E	¾	1675	3¾x5⅛	35x5†	35x5†	B
Brockway, S-4	1½	2250	3¾x5	36x3½*	36x5*	W
Brockway, K-5	2½	3200	4½x5½	36x4	36x8	W
Brockway, R-4	3½	4100	4½x5½	36x5	36x5d	W
Brockway, T	5	4750	4¾x6	36x6	40x6d	W
Capitol, G1½	1½	2975	3¾x5	35x5	38x7	W
Capitol, H2½	2½	3700	4¼x6	36x4	36x8	W
Capitol, K2½	2½	4250	4¼x6	36x6	42x9	W
Capitol, M3½	3½	4425	4¼x6	36x5	36x10	W
Case, ††	2	3000	4¼x5¾	36x6	38x7	I
Champion Light Commercial	½	1195	3½x5	32x3½	32x3½	I
Chevrolet, G	¾	745	3¼x4	31x4†	34x4½†	B
Chevrolet, T	1	1125	3¼x5¼	33x4†	35x5†	W
Chicago, C1½	1½	....	3¾x5½	36x3½*	36x5*	W
Chicago, C2½	2½	....	4 x5½	36x4*	36x7*	W
Chicago, C3½	3½	....	4½x5½	36x5	36x10	W
Chicago, D5	5	....	4½x5½	36x6	40x12	W
Climber, A-20	1½	2450	3½x5	36x6*	38x7*	I
Clydesdale, 18	¾	1890	3¾x5	34x5	34x5	W
Clydesdale, 32C	1	2375	3¾x5½	34x3½*	34x5*	W
Clydesdale, 42C	1½	2475	4 x5⅛	36x3½	36x5	W
Clydesdale, 65C	2½	3250	4¾x5½	36x4	36x7	W
Clydesdale, 65EC	2½	3450	4½x5½	36x4	36x7	W
Clydesdale, 90C	3½	4100	4½x5½	36x5	40x10	W
Clydesdale, 120C	5	4500	4¾x6	36x6	40x12	W
Collier, 18	1	2350	3¾x5	34x4	34x5	W
Collier, 19	1½	2550	3¾x5	36x4	36x6	W
Collier, 21	2	2950	4½x5¼	36x4	36x7	W
Collier, 22	2½	3250	4½x5¼	36x4	36x4	I
Columbia, H	1½	2350	3¾x5	35x5†	34x5	I
Columbia, G	2½	2850	4 x5¼	36x4	36x7	I
Comet	1½	1950	3¾x5	34x4	34x4	W
Commerce, T	¾-1½	1450	3¾x5	34x4½†	34x4½†	B
Commerce, 12	1½	1800	3¾x5	35x5†	35x5†	I
Commerce, 16	2	2150	3¾x5	35x5†	35x6†	I
Concord, A	1½	3150	4 x5½	36x3½	36x6	W
Concord, B	2½	3600	4¼x5½	36x4	36x8	W
Concord, AX	1½	3250	4 x5½	36x3½	36x6	W
Concord, BX	2½	3600	4½x5½	36x4	36x8	W
Cook, 41	2	3000	4 x5½	36x6†	38x7†	I
Corbitt, H	¾-1	1800	3¾x5	35x5†	35x5†	B
Corbitt, E	1	2200	3¾x5	34x3½	34x4	W
Corbitt, D	1½	2600	3¾x5	36x3½	36x5	W
Corbitt, C	2	3150	4¼x5¼	36x3½	36x7	W
Corbitt, B	2½	3300	4¼x5¼	36x4	36x7	W
Corbitt, A	3½	$4100	4½x5½	36x5	36x10	W
Corbitt, AA	5	5000	4¾x6	36x6	40x6d	W
Cyclone, A	1½	2685§	3½x5	34x5†	36x6†	I
Dart, S	1½	....	3¾x5⅛	34x3½	34x6	W
Dart, M	2½	....	4¼x5½	36x4	36x7	W
Dart, W	3½	....	4½x6	36x5	36x10	W
Day-Elder, A	1	2100	3¾x5	34x3½	34x4	W
Day-Elder, B	1½	2300	3¾x5	34x3½	34x5	W
Day-Elder, D	2	2750	4½x5¼	36x4	36x7	W
Day-Elder, C	2½	3025	4½x5½	36x4	36x7	W
Day-Elder, F	3½	3750	4½x5½	36x5	36x5d	W
Day-Elder, E	5	4250	4½x6	36x5*	40x6d*	W
Dearborn, E	1	1700	3¾x5⅛	35x5†	35x5†	W
Dearborn, FX	1½	2300	3¾x5⅛	34x4	34x5	W
Dearborn, F	1½	2180	3¾x5⅛	34x4*	34x5*	W
Dearborn, 48	2	2590	3¾x5⅛	35x5†	34x7†	W
Defiance, G	1	1695§	3¾x6	35x5†	35x5†	I
Defiance, D	1½	2095§	3¾x5	35x5†	36x6†	I
Defiance, E	2	2275§	3¾x5	35x5†	38x7†	I
DeKalb, E2½	2	2600	4¼x5¼	36x4*	36x6*	W
DeKalb, E2	2½	2250	4¼x5¼	34x3½*	36x5*	W
DeMartini, 1½	1½	2600	3¾x5	34x3½	34x6	W
DeMartini, 2	2	3300	4 x5½	36x3½	36x7	W
DeMartini 3	3	4250	4½x5½	36x4	36x10	W
DeMartini 4	4	4800	4½x6	36x5	36x12	W
Denby, 31	¾	1625	3½x5	35x5	35x5	B
Denby, 33	1½	2300	3¾x5	35x5†	38x7†	I
Denby, 34	2	2600	3¾x5	36x3½	36x6	I
Denby, 25	3	3300	4¼x5¼	36x4	36x7	I
Denby, 27	4	4200	4½x5½	36x5	36x5d	I
Denby, 210	5	4850	4½x5½	36x6	40x6d	I
Dependable, A	¾-1	1650	3¾x5⅛	34x5	36x6	W
Dependable, C	1½	2350	3¾x5¼	34x3½	34x5	W
Dependable, D	2	2650	4 x5½	34x5	36x6	W
Dependable, E	2½	2950	4¼x5½	36x4	36x7	W
Dependable, G	3½	3550	4¼x6	36x6	38x7	W
Diamond T, O	1	2500	3¾x5¼	34x5†	36x6†	W
Diamond T, FS	1½	2960	3¾x5¼	36x3½	36x5	W
Diamond T, T	1½	2650	3¾x5¼	36x3½	36x5	W
Diamond T, U	2	3285	4 x5¼	36x4	36x7	W
Diamond T, K	3½	4675	4¼x5½	36x5	36x5d	W
Diamond T, EL	5	5100	4½x5½	36x6	40x6d	W
Diamond T, S	5	5650	4¾x6	36x6	40x6d	W
Diehl, A	1	....	3½x5	34x4½	35x5	I
Diehl, B	1½	....	3½x5	36x6	36x6	I
Dispatch, F	1	1350	3¾x5	34x4†	34x4†	I
Doane	2½	4100††	4¼x5¾	36x5	36x7	C
Doane	3½	5100††	4¾x5¾	36x5	36x5d	C
Doane	6	6000††	5 x6½	36x6	40x6d	C
Dodge Brothers	½	885	3⅞x4½	33x4†	33x4†	B
Dorris, K-4	2-2½	3400	4¼x5½	36x4	36x7	W
Dorris, K-7	3½	4400	4¼x5½	36x5	36x10	W
Double Drive B	3	4000	4¼x5½	6	6	W
Douglas G	1½	2050	3¾x5⅛	36x5	37x8*	W
Douglas I	3	3250	4¼x5½	36x6	37x8*	W
Duplex, A	1½	2775	4 x5¼	35x5†	38x7†	W
Duplex, E	3½	4250	4¼x5½	36x8	36x8	I
Duty, 21	2	1490	3½x5	34x3½	34x5	I
Eagle, 100-2	2	2275	3¾x5¼	34x4*	34x7*	I
Erie, E	1½	....	3¾x5¼	36x6†	36x6†	W
Erie, A	2½	....	4¼x5½	36x4	36x4d	W
F.W.D., B	3	4200	4¾x5½	36x6	36x6	B
Facto, 1921	2½	2895§	4¼x5½	36x4*	36x8*	W
Fageol, 1½	1½	3000	3¾x5¼	34x3½*	34x6*	W
Fageol, 2½	2½	3900	4¼x5¾	34x4	36x7	W
Fageol, 3½	3½	5000	4½x6¼	36x5*	40x5d*	W
Fageol, 5	5	5700	4½x6¼	36x6	40x6d	W
Famous, B10	1	1800	3½x5	36x3½*	36x4*	I
Famous, B12	1½	2100	3¾x5	36x3½*	36x5*	I
Fargo, R	2	2500	3¾x5	36x4	36x6	I
Federal, SD	1	2500	3¾x5	35x5†	36x6†	W
Federal, TE	1½	2725	4¼x5¼	36x3½	36x5	W
Federal, UE	2	3025	4¼x5¼	36x4	36x7	W
Federal, WE	3½	3950	4½x5½	36x5	36x5d	W
Federal, X2	5-6	5350	4¾x6	36x6	40x6d	W
Ford, TT	1	445	3¾x4	30x3½*	32x4½*	W
Forschler, A	1	....	3½x5	34x3	34x4	W
Forschler, AX	1½	....	3½x5	36x3½	36x5	W
Forschler, B	2	....	4¼x5¼	36x4	36x7	W
Forschler, BX	3	....	4¼x5¼	36x4	36x8	W
Front Drive C	1½	2800	3¾x5½	5	4	W
Fulton, A	¾	1750	3½x5	35x5†	35x5†	B
Fulton, C	2	2350	3½x5	34x4	34x6	I
G & J**	2	3850	4x5¼	36x4	36x7	W
G & J**	3½	5175	4½x5½	36x5	36x5d	W
G.M.C., K16	1	1495	3½x5½	34x5†	34x5†	B
G.M.C., K41 A	2	3000	4 x5½	36x4*	36x7*	W
G.M.C., K71 A	3½	4250	4½x6	36x5	40x5d	W
G.M.C., K101A	5	4650	4½x6	36x5	40x6d	W
G.W.W.	1½	2100	3¾x5½	35x5	35x5	I
Garford, 15	¾	1590	3⅝x5½	34x5†	34x5†	W
Garford, 25	1¼	2090	3⅝x5½	36x3½	36x4	W
Garford, 70-H	2	3190	4¼x5½	36x4	36x7	W
Garford, 68D	5	5200	5 x6½	36x6	40x6d	W
Garford, 77D	3½	4390	4½x6	36x5	36x6d	W
Garford, 150-A	7½	5500	5x6½	36x6	40x7d	C
Gary, F	1	2100	3¾x5	36x3½	36x4	W
Gary, I	1½	2550	4 x5½	36x3½	36x5	W
Gary, J	2½	$3150	4¼x5½	36x4	36x7	W
Gary, K	3½	4050	4½x6	36x5	40x5d	W
Gary, M	5	5150	5 x6½	36x6	40x6d	W
Gersix, M	1½	3100	4 x5½	36x3½	36x7	W
Gersix, K	2½	3500	4½x5½	36x4	36x8	W
Gersix	3½	4500	4½x6	36x5	40x12	W
Giant, 15-A	1½	2250	3¾x5	34x3½	34x5	W
Giant, 16	2	3050	4¼x5¼	36x4	36x7	W
Giant, 17	3½	4150	4½x5½	36x5	36x5d	W
Golden West, GH	3	5000	4½x6	36x7	36x7	W
Golden West, G	3½	4500	4½x5½	36x6	36x6	W
Golden West, H	3½-4	5000	4½x6	36x6	36x6	W
Golden West, T	4	5500	4¾x6	36x6	36x6	W
Golden West, K	7	6000	5½x6	36x6	36x6	W
Golden West, HA	7	6000	4½x6	36x6	36x10	W
Graham Bros. A	1½	2495	3¾x5	35x5†	36x6†	I
Gramm-Bern., 10	1	1495§	3½x5	33x5†	33x5†	B
Gramm-Bern., 15	1½	2050§	3¾x5	36x3½*	36x5*	I
Gramm-Bern., 65	1½	2725§	3¾x5	36x3½*	36x5	W
Gramm-Bern., 20	2	3175§	4½x5½	36x4*	36x7*	W
Gramm-Bern., 25	2½	3575§	4¼x5½	36x4*	36x4d*	W
Gramm-Bern., 35	3½	4375§	4½x5½	36x5	40x5d*	W
Gramm-Bern., 50	5	5275§	4¾x6	36x6	40x6d*	W
Hahn, J4	1	....	3¾x5	34x5*	34x5*	W
Hahn, CD	1½	....	4½x5¼	36x3½*	36x6*	W
Hahn, EE	2½	....	4½x5½	36x4*	36x8*	W
Hahn, F	3½	....	4½x5½	36x5*	36x10*	W
Hahn, EF	5	....	4¾x6	36x6	40x12	W
Hal. Fur, E	1	2350	4 x5	35x5†	35x5†	W
Hal. Fur, B	2½	3250	4¼x5½	35x5*	38x7*	W
Hal. Fur, F	3½	4250	4½x5½	36x6†	40x10†	W
Hall	1½	3100	3¾x5	34x5†	38x7†	W
Hall	2½	3275	4¼x5¼	36x4	36x6	W
Hall	3½	4100	4½x5½	36x5	36x5d	W
Hall	5	5100	4½x5½	36x5	40x6d	W
Hall	7	5100	4½x5½	36x5	40x6d	C
Harvey, WEA	1½	2550	4¼x5½	34x3½	34x5	W
Harvey	2	2950	4½x5½	34x4	34x7	W
Harvey, WFA	2½	3300	4¼x5½	36x4	36x7	W
Harvey, WHA	3½	3950	4½x6	36x5	36x5d	W
Harvey, WKA	5	4500	4½x6	36x6	40x6d	W
Hawkeye, K	1½	1850	3¾x5¼	34x3½*	34x5*	I
Hawkeye, M	2	2650	4¼x5½	36x4*	36x6*	I
Hawkeye, N	3½	3700	4½x6	36x5*	36x10*	I
Hendrickson, N	2½	3150	4¼x5¾	36x4*	36x7*	W
Hendrickson, M	3½	3975	4¼x5¾	36x5*	36x5d*	W
Highway, KnightA	4	....	4 x6	36x5	36x6d	W
Highway, KnightB	5	....	4 x6	36x5	40x6d	W
Higrade, A17	¾	1850	3½x5	32x4½	32x4½	W
Higrade, A18	1	2100	3½x5	35x5†	35x5†	W
Higrade, B20	1½	2500	4⅛x5¼	35x4†	36x6†	W
Huffman, B	1½	1995	3¾x5	34x3½	34x6	W
Huffman, C	1½	1795	3¾x5¼	34x3½	34x6	I
Hurlburt	1½	....	4 x5½	34x4	34x5	W
Hurlburt	2½	....	4½x5½	36x4	36x4d	W
Hurlburt	3½	....	4½x6	36x5	36x5d	W
Hurlburt	5	....	4½x6	36x5	40x6d	W
Huron Erie	1½	2425	3¾x5¼	36x3½	36x5	I
Huron Mich.	2½	2950	4¼x5½	36x4	36x7	I
Indep'd't(Iowa), B	1	1065	3½x5	34x3½	34x4	W
Indep'd't(Iowa), G	1½	2040	3¾x5¼	34x3½	34x5	I
Indep'd't(Ia.), H.I	2½	2940	4¼x5¼	34x4	34x6	I
Indep d't(Ohio), F	1½	2585	3¾x5	36x3½	36x5	W
Indep'd't(Ohio), H	2½	2985	4¼x5¼	36x4	36x4d	W
Indep'd't(Ohio), K	3½	3985	4½x5½	36x5	36x5d	W
Indiana, 12	1¼	2290	3¾x5¼	34x3½*	34x5*	W
Indiana, 20	2	2950	4½x5½	36x4*	36x7*	W
Indiana, 25	2½	3150	4¼x5½	36x4*	36x8*	W
Indiana, 35	3½	3750	4¾x5½	36x5*	36x5d*	W
I-diana, 51	5	4795	5 x6¼	36x5*	40x6d*	W
Inland, D	2	2950	4 x5	34x5	34x6	I
International, S	¾	1500	3½x5	34x5†	34x5†	i
International, 21	1	1750	3½x5¼	36x3½	36x3½	I
International, 31	1½	1850	3½x5¼	36x3½	36x4	I
International, 41	2	2100	3½x5¼	36x3½	36x5	I
International, 61	3	2400	4½x5	36x4	36x6	I
International, 101	5	3600	4½x5	36x5	40x10	I
J & J, D	2	3250	4 x5	34x4*	34x6	I
Jackson, 4WD	3½	3850	4½x5½	36x7	36x7	B
Jumbo, 15	1½	2425	3¾x5¼	36x3½	36x5	I
Jumbo, 20	2	2675	3¾x5¼	35x5†	38x7†	I
Jumbo, 25	2½	3090	4½x5½	36x4	36x7	I
Jumbo, 30	3	3590	4¼x5½	36x6†	42x9†	I
Jumbo, 35	3½	4080	4½x6	36x5	36x10†	I
Jumbo, 40	4	4730	4½x6	38x7†	44x10	I
K-Z, 1	1	2250	3½x5	34x3½	34x5	W
K-Z, 1½	1½	2750	3¾x5	36x4	36x6	W
K-Z, 2½	2½	3250	4½x5¼	36x4	36x8	W
K-Z, 3½	3½	4250	4½x5½	36x5	40x10	W
K-Z, 5	5	5200	4½x5½	36x6	40x6d	W
Kalamazoo, G-1	1½	2495	3¾x5	34x4	34x5	W
Kalamazoo, G-2	1½	2800§	3¾x5	36x5	36x6	W
Kalamazoo, H	2½	3275§	4 x6	36x4	36x8	W
Kalamazoo, K	3½	4000§	4¼x6	36x5	36x10	W
Kalamazoo K-5	5	4500§	4½x6	36x6	36x6d	W
Karavan, A	2½	3900	4¼x6	36x4	36x8	W
Kearns, H	¾	1600	3¼x4½	32x4½†	32x4½†	I
Kearns, N	1½	2200	3½x5	34x3½	34x6	I
Kelly-S, K-31*	1½	2900	3¾x5¼	36x3½	36x6	C
Kelly-S., K-34	1½	2900	3¾x5¼	36x3½	36x6	W
Kelly-S., K-38	2½	3250	3¾x5¼	36x4	36x4d	C
Kelly-S., K-35	2½	3250	3¾x5¼	36x4	36x4d	C
Kelly-S., K-40	3½	4200	4½x6½	36x5	40x5d	C
Kelly-S., K-41	3½	4200	4½x6½	36x5	40x5d	I
Kelly-S., K-42	3½	4200	4½x6½	36x5	40x5d	W

*2-cyl. †6-cyl. ‡8-cyl. All others, not marked, are 4-cyl. Trac., Tractor. **Canadian made.

Final Drive: W—Worm, I—Internal Gear, C—Chains, D—Double Reduction, B—Bevel, 4—Four-Wheel, E—External Gear. *Tires—optional. †Pneumatic Tires. All others solid. ††Price includes body. §—Price includes several items of equipment.

Kelly-Springfield.

Specifications of Current Motor Truck Models—Continued

NAME AND MODEL	Tons Capacity	Chassis Price	Bore and Stroke	TIRES Front	TIRES Rear	Final Drive
Kelly-S., K-45	4	$4550	4½x6½	36x5	40x6d	C
Kelly-S., K-50	5	4900	4½x6½	36x6	40x6d	C
Kelly-S., K-60	6	5100	4½x6½	36x6	40x7d	C
Keystone, 40	2	2450	3¾x5⅛	34x5†	38x7†	I
Kimball, AB	2	3675	4 x6	36x4	36x7	W
Kimball, AC	2½	3975	4¼x6	36x4	36x8	W
Kimball, AK	3	4500	4½x6	36x4	36x10	W
Kimball, AE	4	5000	4¾x6	36x5	40x12	W
Kimball, AF	5	5975	5 x6	36x6	40x7d	W
Kissel, Express	1	1985††	3⅞x5½	34x5†	34x5†	W
Kissel, Utility	1½	1975	3½x5½	36x3½	36x5	W
Kissel, Freighter	2½	2875	4¼x5½	36x4	36x7	W
Kissel, H. D.	4	3675	4¼x5½	36x5	36x5d	W
Kleiber, AA	1	2600	4½x5¼	34x3½*	34x5*	W
Kleiber, A	1½	3100	4½x5¼	36x3½*	36x6*	W
Kleiber, BB	2	3600	4½x5¼	36x4*	36x7*	W
Kleiber, B	2½	3950	4½x5½	36x5*	36x8	W
Kleiber, C	3½	4600	4½x5½	36x5	36x5d	W
Kleiber, D	5	5300	5 x6½	36x6	40x12	W
Koehler, D	1½	1885	3½x5	34x3½	34x5	W
Koehler, M	2½	2875	4 x5⅛	36x4	36x7	W
Koehler, MCS	2½	2975	4 x5⅛	36x4	36x7	W
Koehler, F	3½	3985	4½x5½	36x5	36x10	W
Koehler, MT, Trac	5	2975	4 x5⅛	36x4	36x7	W
L.M.C., 2-20	2½	2540	4½x5¼	36x4	36x4d	I
Lange, B	2½	3350	4½x5¼	36x4*	36x6*	C
Larrabee, XZ	¾-1	1925	3¼x4½	34x5†	34x5†	B
Larrabee, U	1½	2400	3¾x5	34x3½	34x5	W
Larrabee, SK	2½	3200	4½x5¼	36x4	36x7	W
Larrabee, FL	3½	4000	4½x5½	36x5	36x5d	W
Larrabee, FW	5	4800	4¾x6	36x6	40x6d	W
Lion, L	1	2350	3¾x5⅛	35x5†	35x5†	W
Luedinghaus, C	1	2100	3½x5	35x5†	35x5†	W
Luedinghaus, W	1½	2700	3¾x5¼*	34x3½*	34x5*	W
Luedinghaus	2-2½	3150	4¼x5¾	36x4*	36x7*	W
Maccar, L	1½	2925	4½x5¼	36x4	36x6	W
Maccar, H-2	2½	3650	4½x5½	36x4	36x4d	W
Maccar, M-2	3½	4500	4½x6	36x5	36x5d	W
Maccar, G	5	5500	4¾x6	36x5	40x6d	W
MacDonald, A	7½	5750	4½x6	40x7	40x14	I
Mack, AB D.R.	1½	3450	4 x5	36x4	36x3½d	D
Mack, AB	2½	3400	4 x5	36x4	36x4d	C
Mack, AB Chain	1½	3000	4 x5	36x4	36x3½d	C
Mack, AB Chain	2	3300	4 x5	36x4	36x4d	C
Mack, AB D.R.	2	3750	4 x5	36x4	36x4d	D
Mack, AC Chain	3½	4950	5 x6	36x5	40x5d	C
Mack, AC Chain	5	5500	5 x6	36x6	40x6d	C
Mack, AC Chain	6½	5750	5 x6	36x6	40x12	C
Mack, AC Chain	7½	6000	5 x6	36x7	40x7d	C
Mack Trac, AB	5	3400	4 x5	36x4	36x4d	C
Mack Trac., AC	7	4950	5 x6	36x5	40x5d	C
Mack Trac. AC	10	5500	5 x6	36x6	40x6d	C
Mack Trac., AC	13	5750	5 x6	36x6	40x12	C
Mack Trac., AC	15	6000	5 x6	36x7	40x7d	C
Mapleleaf, AA**	2	4150	4 x5¼	36x4	36x7	W
Mapleleaf, BB**	3	4775	4¼x5½	36x4	36x4d	W
Mapleleaf, CC**	4	5770	4½x5½	36x5	36x5d	W
Mapleleaf, DD**	5	6825	4½x5½	36x6	40x6d	W
Master, JW	1½	2690	4¼x5½	34x3½	34x5	W
Master, W	2½	3290	4¼x5½	34x4	36x7	W
Master, D	2½	3540	4¼x5½	34x4	36x7	D
Master, A	3½	4190	4½x6	36x5	40x5d	W
Master, E	3½	4640	4½x6	36x5	40x5d	D
Master, B	5	5290	4¾x6½	36x6	40x6d	W
Master, F	5	5440	4¾x6½	36x6	40x6d	D
Master Trac., T	6	3740	4¼x5½	34x4	36x7	D
Maxwell, 1½	1½	1332	3⅝x4¼	32x3	32x4	W
Menominee, HT	1	2080	3¾x5	34x3½	36x5	W
Menominee, H	1½	2725	4 x5	36x3½	36x5	W
Menominee, D	2	3245	4 x6	36x4	36x8	W
Menominee, G	3½	4270	4½x6	36x5	36x10	W
Menominee, J3	5	5450	4¾x6	36x6	40x12	W
Moline, 10	1½	2150	3½x5	34x5†	36x6†	I
Moreland, 20N	1	2850	3¾x5	35x5†	36x6†	I
Moreland, 21B	1½	2800	4½x5¼	36x3½	36x6	W
Moreland, 21C	2½	3500	4½x5½	36x4	36x8	W
Moreland, 21H	3½	4600	4¾x6	36x5	40x5d	W
Moreland, 21J	5	5000	4¾x6	36x6	40x6d	W
Napoleon, 79	¾-1	1350	3½x5	38x4	33x4†	I
Napoleon, XX-7	1	1535	3½x5	35x5*	35x5*	I
Napoleon, 11	1½	1860	3½x5	35x5*	36x6*	I
Nash, 2018	1	1895	3¾x5¼	35x5	36x6	I
Nash, 3018	2	2550	3¾x5¼	36x6	40x8	I
Nash, Quad.	2	3250	4¼x5½	40x8	40x8	I
¹Nelson, F1½	1½	....	4½x5¼	36x3½	36x5	W
¹Nelson, F2	2	....	4½x5¼	36x4	36x7	W
¹Nelson, F3½	3½	....	4½x5½	36x5	36x5d	W
¹Nelson, FCS	5	....	4¾x6	36x6	40x6d	W
Netco, D	2	3100	4½x5¼	36x4*	36x7*	W
Netco, H	2½	3500	4½x5½	36x4*	36x8*	W
New York, M	1½	....	4½x5¼	36x3½	36x5	W
New York, N	2-2½	....	4½x5¼	36x4	36x4d	W
Niles, E	2	3000	4½x5¼	36x4*	36x7*	W
Noble, B30	1½	2400	3¾x5¼	36x3½	36x5	W
Noble, C40	2	2675	4 x5½	36x4	36x7	W
Noble, D50	2½	2950	4¼x5½	36x4	36x8	W
Noble, E70	3½	3800	4½x6	36x5	36x10	W
Northwestern W	1½	2750	4½x5¼	34x4	36x6	W
Northwestern WS	2½	3500	4½x5½	36x4	36x8	W
Norwalk, 25E	1	1695	3½x5	34x3½	34x4	W
Norwalk, 35E	1¼	2025	3½x5	34x3½	34x3½d	W
Norwalk, 35E.Spec	1½	2285	3¾x5¼	34x3½	34x5	W
O. K., K1	1½	2675	4 x5½	36x3½	36x5	W
O. K., L1	2½	3450	4¼x5½	36x4	36x8	W
O. K., M1	3½	4250	4½x6	36x5	36x5d	W
Ogden, A1	1½	2550	3¾x5	36x3½	36x5	W
Ogden, E	2½	$3250	4¼x5¼	36x4	36x7	W
Old Hickory, W	1	2175	3¾x5	36x3½*	36x4*	W
Old Reliable, A	1½	2350	4 x5	34x4	36x6	W
Old Reliable, B	2½	3500	4½x6	34x4	36x4d	W
Old Reliable, C	3½	4250	4½x6	36x5	36x5d	W
Old Reliable, D	5	5250	4¾x6	36x6	40x6d	W
OldReliable, KLM	7	6000	4¾x6¼	36x6	40x7d	C
Oldsmobile Econ.	1	1095	3¼x5¼	35x5†	35x5†	I
Olympic, A	2½	3500	4¼x5½	36x4	36x7	W
Oneida, A-9	1¼	2350	3¾x5½	36x3½	36x5	W
Oneida, B-9	1¾	2915	4 x5¼	36x4	36x7	W
Oneida, C-9	2½	3390	4 x5¼	36x4	36x7	W
Oneida, D-9	3½	4345	4½x5½	36x5	36x10	W
Oneida, E-9	5	5460	4½x5½	36x6	40x12	W
Oshkosh, A	2	3750	3½x5	36x6†	36x6†	4
Oshkosh, AA	2	3850	3½x5	36x6†	36x6†	4
Oshkosh, B	2½	4150	4 x5⅛	38x7†	38x7†	4
Oshkosh, BB	2½	4300	4 x5⅛	38x7†	38x7†	4
Packard, EC	....	3500	4¼x5½	36x4	36x7	W
Packard, ED	....	4100	4½x5½	36x5	36x5d	W
Packard, EF	....	4500	5 x5½	36x6†	40x6d†	W
Packard, EX	....	4000	4¼x5½	36x6†	40x8†	W
Paige, 52-19	1½	2880	4 x5¼	34x3½	34x5	W
Paige, 51-20	2½	3100	4½x5½	34x4	34x8	W
Paige, 51-18	3½	4285	4½x5½	36x5	36x5d	W
Parker, F20	2	3500	4 x6	34x4	36x4d	W
Parker, J20	3½	4400	4½x6	36x5	40x5d	W
Parker, M20	5	5500	4¾x6	36x6	40x6d	W
Patriot, Revere	¾	1785	3¾x5	35x5†	35x5†	W
Patriot, Lincoln	1½	2150	4 x5¼	34x3½*	34x5*	W
Patriot, Washgt'n	2½	3150	4½x5½	36x4*	36x7*	W
Piedmont, 4-30	1½	1685	3½x5	31x4†	34x4†	W
Pierce-Arrow	2	3200	4 x5½	36x4	36x4d	W
Pierce-Arrow	3½	4350	4½x6¾	36x5	36x5d	W
Pierce-Arrow	5	4850	4½x6¾	36x5	40x6d	W
Pioneer, 59	1	1550	3¾x4¼	32x4½†	32x4½†	W
Pittsburger, C-21	2½-3	3500	4½x5¼	36x5*	36x7*	W
Pony	¼	400	2¾x4	28x3†	28x3†	C
Power, F	1½	....	3¾x5¼	36x6	36x6	W
Power, C	3½	....	4¼x5½	36x5	40x10	W
Premocar, B-143	1½	2475	3½x5	36x6†	36x6†	W
Rainier, R-11	¾	2150	3½x5	35x5†	35x5†	W
Rainier, R-19	1	2350	3½x5	34x3½	31x4	W
Rainier, R-16	1½	2600	3¾x5	34x3½	34x5	W
Rainier, R-18	2	2950	4½x5¼	34x4	34x6	W
Rainier, R-20	2½	3600	4½x5¼	34x4	34x7	W
Rainier, R-15	3½	4500	4½x5½	36x5	36x5d	W
Rainier, R-17	5	5250	4½x6	36x6	36x6d	W
Ranger, TK-20-2	2	....	3¾x5	36x6†	36x6†	W
Reo, F	¾-1½	1385	4½x4½	34x4½†	34x4½†	B
Reliance, 10A	1½	2400	4 x5½	36x3½	36x5	I
Reliance, 20B	2½	3100	4½x5½	36x4	36x4d	I
Republic, 75	¾	1395††	3½x5	32x4½	32x4½	I
Republic, 10	1	1695	3¾x5	35x5†	35x5†	I
Republic, 10Exp.††	1	2095	.....	35x5†	35x5†	I
Republic, 11X	1½	2295	3¾x5	34x3½	34x5	I
Republic, 19	2½	2795	4½x5¼	36x4	36x7	I
Republic, 20	3½	3845	4½x5½	36x5	36x10	I
Rowe, CW	1½	3000	3¾x5	36x6†	36x6†	W
Rowe, C. D. W.	2	3300	4 x5	34x4	36x3½d	W
Rowe, G. S. W.	3	4150	4 x6	34x5	36x5d	W
Rowe, G. P. W.	3	5250	3¼x5†	38x7†	42x9†	W
Rowe, HW	4	4500	4¼x6	36x5	36x6d	W
Rowe, F. W.	5	5500	4½x6	36x6	40x6d	W
Rumely, A	1½	2720	3¾x5¼	36x3½	36x5	W
Samson, KO 15	¾	865	3½x4	32x4	32x4	B
Samson, E 25	1¼	1395	3½x5½	35x5	35x5	B
Sandow, G	1	2295	3¾x5	34x3½	34x5	W
Sandow, CG	1½	2590	3¾x5	34x4	34x6	W
Sandow, J	2½	3275	4¼x5¼	36x4	36x7	W
Sandow, M	3½	4295	4½x5½	36x5	36x5d	W
Sandow, L	5	4975	4½x5½	36x6	40x6d	W
Sanford, 25	2½	3350	4½x5¼	36x4	36x4d	W
Sanford, 35	3½	4200	4½x5½	36x5	36x5d	W
Sanford, 50	5	5100	4¾x6	36x5	40x6d	W
Schacht, 2-Ton	2	....	4¼x5½	36x4	36x7	W
Schacht, 2½-Ton	2½	....	4¼x5½	36x4	36x4d	W
Schacht, 3½-Ton	3½	....	4¼x6	36x5	36x5d	W
Schacht, 5-Ton	5	....	4½x6	36x5	40x6d	W
Schwartz, A	1	1685	3½x5	33x4½†	33x4½†	B
Schwartz, BW	1½	2600	3¾x5¼	34x3½*	34x7*	W
Schwartz, C.W.S.	2½	3200	4¼x5½	36x4	36x8	W
Schwartz, DW	5	4900	4½x6	36x6	40x12	W
Selden, 1½A	1½	2360	3¾x5	34x3½	34x5	W
Selden, 2½A	2½	3425	4½x5¼	36x4	36x7	W
Selden, 3½A	3½	4175	4½x5½	36x5	36x10	W
Selden, 5A	5	5600	4¾x6	36x6	40x12	W
Seneca, M	½	1020	3½x4½	30x3½†	30x3½†	B
Service, 15	¾-1	1840	3¾x5	34x4½	35x5	B
Service, 220	1	2415	3½x5½	34x3½	34x5	W
Service, 31	1½	2985	4 x5½	36x3½	36x6	W
Service, 36	1½	3415	4¼x5½	35x5†	38x7†	W
Service, 51	2½	3475	4¼x5½	36x4	36x7	W
Service, 71	3½	4285	4¼x5½	36x5	36x5d	W
Service, 76	3½	4485	4½x6	36x5	36x5d	W
Service, 101	5	5275	4½x6	36x6	40x6d	W
Signal, NF	1	$2475	4¾x5	34x5†	36x6†	W
Signal, H	1½	2925	4½x5¼	34x4	36x6	W
Signal, J	2½	3275	4½x5¼	34x4	36x8	W
Signal, M	3½	4275	4½x5½	36x5	40x5d	W
Signal, R	5	5300	4¾x6	36x6	40x6d	W
Southern, 10	1	2090	3¾x5	34x3½	34x4	W
Southern, 15	1½	2590	3¾x5⅛	36x6†	34x4	W
Southern, 20	2	2990	4¾x5¼	36x6†	40x8*	W
Standard, 1-K	1-1½	1800	3¾x5	34x3½*	34x5*	W
Standard, 76	2½-3	2000	4½x5¼	36x4*	36x7*	W
Standard, 66	3½-4	2800	4½x5½	36x5	36x10	W
Standard, 5-K	5-7	4400	4¾x6	36x6	40x12	W
Sterling, 1½	1½	3200	4 x5⅜	36x3½	36x5*	W
Sterling, 2	2	3500	4 x5⅜	36x4	36x6	W
Sterling, 2½	2½	3650	4⅜x5⅜	36x4*	36x4d*	W
Sterling, 3½	3½	4650	4½x6¼	36x5*	40x5d*	W
Sterling, S-W	5	5500	5 x6¼	36x6*	40x6d*	W
Sterling, S-C	5	6000	5 x6¼	36x6	40x6d	C
Sterling, 7½	7½	6500	5 x6¼	36x6	40x7d	C
Stewart, 14	¾	1395	3⅝x5½	32x4½†	32x4½†	I
Stewart, 15	1	1875	3½x5	35x5†	35x5†	I
Stewart, 9	1½	2200	3¾x5	34x3½	34x5	I
Stewart, 7	2	2800	4½x5¼	34x4	34x7	I
Stewart, 7-X	2½	2950	4¼x5½	34x4	34x7	I
Stewart, 10	3½	3850	4½x5½	36x5	36x5d	I
Stewart, 10-X	3½	3850	4½x6	36x5	36x5d	I
Stoughton, A	1	1995	3¾x5¼	34x4½†	35x5†	W
Stoughton, B	1½	2350	3¾x5¼	36x3½	36x5	W
Stoughton, C	¾	1240	3½x5	34x4½†	34x4½†	W
Stoughton, D	2	2800	4 x5¼	36x4	36x7	W
Stoughton, F	3	3600	4¼x5½	36x5d	36x5d	W
Sullivan, E	2	3350	4¼x5½	36x4*	36x7*	W
Sullivan, H	3½	4650	4½x6	36x5	36x7d	W
Superior, D	1	1650	3¾x5	34x4½†	34x4	I
Superior, E	2	2600	4⅛x5¼	36x4	36x6	I
Super Truck, 50	2½	3300	4 x6	36x4	36x8	W
Super Truck, 70	3½	4300	4¼x6	36x5	40x5d	W
Super Truck, 100	5	5300	4¾x6	36x5	40x12	W
Super Truck, 150	7½	6300	5 x6	36x6	40x7d	W
Texan, A38	¾	1095	3½x5	33x4	33x4	I
Texan, TK39	1½	1550	3½x5	36x6	38x7	W
Tiffin, GW	1½	2400	4½x5¼	36x3½	36x5	W
Tiffin, MW	2½	3100	4½x5¼	36x4	36x3½d	W
Tiffin, PW	3½	4100	4½x5½	36x5	40x5d	W
Tiffin, F50	5	4800	4¾x6	36x6	40x6d	W
Tiffin, F60	6	5000	4¾x6	36x6	40x12	W
Titan, HT	3½	4550	4½x6	34x4*	40x5d	I
Titan, HD	5	5400	4½x6	36x5	40x6d	I
Titan, TS	2½	3400	4¼x5½	34x4*	36x4d	I
Tower, J	1½	3000	4¼x5¼	35x5	38x7	W
Tower, H	2½	3475	4¼x5¼	36x4	36x7	W
Tower, G	3½	4400	4½x5½	36x5	36x5d	W
Traffic, C	....	1595	3¾x5	34x3½*	34x5*	I
Traffic	3	1895	3¾x5	36x4	36x7	I
Transport, 20	1	1395	3¾x5⅛	34x3½	34x4	I
Transport, 30	1½	1995	3¾x5	36x3½	36x5	I
Transport, 50	2½	2785	4¼x5½	36x4	36x7	I
Transport, 70	3½	3885	4½x6	36x5	36x10	I
Traylor, B	1½	2390	3¾x5⅛	34x3½	34x5	W
Traylor, C	2	2850	4 x5½	36x4	36x7	W
Traylor, D	3	3300	4¼x5½	36x4	36x8*	W
Traylor, E	4	4450	4½x6	35x5	40x10	W
Traylor, F	5	4700	4½x6	36x6	40x6d	W
Triangle, AA	¾-1	1385	3¼x5	34x4½†	34x4½†	I
Triangle, A	1½	2350	3¾x5¼	34x3½*	34x6*	I
Triangle, C	2	2700	3¾x5¼	36x4*	36x6*	I
Triangle, B	2½	2950	4 x5¾	36x4*	36x7*	I
Triumph, G	1	1995	3⅝x5⅛	34x5†	34x5†	W
Triumph, HC	1½	2550	3¾x5¼	36x3½	36x5	W
Triumph, HB	2	2900	3¾x5¼	36x4	36x7	W
Twin City, B.W.	2	2750	4 x5½	36x4	36x7	I
Twin City, A.W.	3½	4000	4½x6	36x5	40x5d	W
²Twin City, B	3½	4750	5½x6	36x6	36x6	I
²Twin City, A	5	5250	5½x6	36x7	36x7	I
Ultimate, A	2	3200	4 x5½	36x3½*	36x6*	W
Ultimate, AJ	2	3250	4¼x5½	35x5†	38x7†	W
Ultimate, B	3	3750	4¼x5½	36x4*	36x4d*	W
Ultimate, BL	3	3850	4¼x5½	36x4*	36x4d*	W
Union, FW	2½	3490	4 x6	36x5*	36x8*	D
Union, HW	4	4485	4½x6	36x6	40x12	D
Union, JW	6	5800	5 x6	36x6	40x14	D
United, A	1½	2445	3¾x5¼	36x3½*	34x5*	I
United, B	2½	3150	4¼x5½	36x4*	36x7*	I
United, C	3½	3975	4¼x5½	36x5	36x5d	I
United, V	5	5000	4½x6	36x6	40x6d	I
U. S., N	1½	1975	3¾x5	36x3½*	36x5*	I
U. S., R	3	3075	4 x5¼	36x4	36x4d	W
U. S., S	4	3875	4½x5½	36x5	36x5d	W
U. S., T	6	4850	4¾x6½	36x6	40x6d	W
Velie, 46	1½	1585	3¾x5	36x3½	36x5	I
Veteran, E**	1-1½	3500	3¾x5¼	35x5†	36x6†	W
Veteran, A**	2-2½	4000	4¼x5½	36x4*	36x7*	W
Veteran, D**	2½-3	4400	4¼x5½	36x4*	36x7*	W
Veteran, H**	3½-4	5600	4¼x6	36x5	36x5d	W
Vim, 29	½	1050	3¼x4½	31x4†	31x4†	W
Vim, 30	½	1175	3¼x4½	32x4½	32x4½	W
Vim, 31	1	1975	3¾x5⅛	35x5†	35x5†	W
Vim, 22	2	3150	3¾x5½	36x4	36x6	W
Vim, 23	3	3950	4¼x5½	36x5	36x5d	W
Vulcan, 25	2½	4000	4¼x6	36x4	36x8	W
Vulcan, 25P	3	4500	4¼x6	36x6	40x8	W
Walker-Johnson, B	2½	3500	4¼x5½	36x4	36x8	W
Walter, S	5	5600	4½x6¼	36x6	40x6d	W
Ward-LaF., 2B	2½	3590	4⅜x5¾	36x4	36x7	W
Ward-LaF., 4A	3½	4690	4½x6¼	36x5	36x5d	W
Ward-LaF., 5A	5	5590	5 x6¼	36x6	40x6d	W

*2-cyl. †6-cyl. ‡8-cyl. All others, not marked, are 4-cyl. Trac., Tractor. **Canadian made.

Final Drive: W—Worm, I—Internal Gear, C—Chains, D—Double Reduction, B—Bevel, 4—Four-Wheel, E—External Gear. *Tires—optional. †Pneumatic Tires. All others solid. ††Price includes body. §—Price includes several items of equipment.

1—Nelson Le Moon. 2—Four-Wheel Drive.

Specifications of Current Motor Truck Models—Continued

NAME AND MODEL	Tons Capacity	Chassis Price	Bore and Stroke	TIRES Front	TIRES Rear	Final Drive
Watson, E	1	$1865	3¾x5¼	35x5†	35x5†	W
Watson, N	3½	4250	4½x5½	36x5	36x10	W
Western, W1½	1½	2550	3¾x5¼	36x3½*	36x5*	W
Western, L1½	1½	2550	3¾x5	36x3½*	36x5*	W
Western, W2½	2½	3250	4½x5¼	36x4	36x7	W
Western, L2½	2½	3250	4½x6	36x4	36x7	W
Western, W3½	3½	4250	4½x6	36x5	40x5d	W
White, 15	¾	2400	3¾x5½	34x5†	34x5†	B
White, 20	2	3250	3¾x5⅛	36x4*	36x7	D
White, 40	3½	4200	3¾x5¾	36x5	40x5d	D
White, 45	5	4500	4¼x5¾	36x6	40x6d	D
White Hick., E	1	2450	3¾x5	34x5†	34x5†	W
White Hick., H	1½	2750	3¾x5	36x3½	36x5	W
White Hick., K	2½	3350	4½x5¼	36x4	36x5	W
Wichita, K	1	2300	3¾x5¼	36x3*	36x4*	W
Wichita, L	1½	2600	3¾x5¼	36x3½*	36x5*	W
Wichita, M	2	2800	3¾x5¼	36x3½*	36x6*	W
Wichita, R	2½	3000	3¾x5¼	36x4*	36x7*	W
Wichita, RX	2½	3600	4¼x6	36x4*	36x8*	W
Wichita, O	3½	4000	4¼x6	36x5*	36x5d*	W
Wichita, S	5	$5000	4½x6	36x6	40x6d	W
Wilcox, AA	1	2100	3¾x5½	36x4*	36x4*	W
Wilcox, B	1½	2775	4¼x5	36x4	36x5	W
Wilcox, D	2½	3300	4¼x5	36x4*	36x3½d*	W
Wilcox, E	3½	4250	4½x6	36x5*	36x5d*	W
Wilcox, F	5	5200	4¾x6½	36x5	40x6d	W
Wilson, F	1½	2270	3¾x5	36x3½	36x5	W
Wilson, EA	2½	2825	4½x5½	36x4	36x7	W
Wilson, G	3½	3635	4½x5½	36x5	36x5d	W
Wilson, H	5	4520	4¾x6	36x6	40x6d	W
Winther, 751	1	1795	3½x5	34x4½†	35x5†	I
Winther, 430	1½	2850	3¾x5	32x4	32x4	I
Winther, 39	1½	$2450	3¾x5	34x3½	34x5	I
Winther, 49	2	3250	4 x5	34x4	34x4d	I
Winther, 50	2½	3995	4 x6	38x7†	42x9†	I
Winther, 70	3½	4200	4 x6	36x5	36x5d	I
Winther, 450	2½	3690	4 x5	34x5	36x6	I
Winther, 109	5	5250	4½x6	36x6	40x5d	I
Winther, 140	7	5900	5 x6	36x6	40x7d	I
Wisconsin, B	1	1950	4 x5¾	34x5†	34x5†	W
Wisconsin, C	1½	2500	4⅜x5¾	36x6†	36x6†	W
Wisconsin, D	2½	3500	4½x6¼	36x6	36x10	W
Wisconsin, E	3½	4000	5 x6¼	36x6†	36x12†	W
Witt-Will, N	1½	2750	3¾x5	36x3½*	36x5*	W
Witt-Will, P	2½	3250	4⅛x5¼	36x3½*	36x7*	W
Wolverine, J	1	2125	3½x5	34x3	34x4	I
Wolverine, J	1½	2375	3¾x5	34x3½	34x5	I
Wolverine, J	2	2640	3¾x5	34x4	34x7	I
Wolverine, J	2½	3425	4½x5¼	36x5	36x10	I
Wolverine, L	3½	4100	4½x5½	36x5	36x10	I
Yellow Cab, M21	¾	2050	3¾x5	32x4	32x4	B
Yellow Cab, M41	1¼	2350	3¾x5	34x4½	34x4½	W

*2-cyl. †6-cyl. ‡8-cyl. All others, not marked, are 4-cyl. Trac., Tractor. **Canadian made.

Final Drive: W—Worm, I—Internal Gear, C—Chains, D—Double Reduction, B—Bevel, 4—Four-Wheel, E—External Gear. *Tires—optional. †Pneumatic Tires. All others solid. ††Price includes body. §—Price includes several items of equipment.

Farm Tractor Specifications and Prices

TRADE NAME	Rating	Price	Wheels or Crawlers	Engine	Cylinders: Bore, Stroke	Fuel	Plow Capacity
All-In One	16-30	$1975	3	Clim.	4-5 x6½	GDK	3-4
Allis-Chalm. B	6-12	925	2	LeR.	4-3½x4½	Gas.	1
Allis-Chal.G.P	6-12	850	2	LeR.	4-3½x4½	Gas.	1-2
Allis-Chalm.	12-20	1495	2	Midw.	4-4½x5¼	Gas.	2-3
Allis-Chalm.	18-30	2150	4	Own	4-4¾x6½x	GorK	3-4
Allis-Chalm.	10-18	875	4	Own	4-4¾x6½	G,K	4
Allwork 2-G	14-28	1875	4	Own	4-4¾x6	GorK	3
Allwork C	14-28	1675	4	Own	4-5 x6	GorK	3
AndrewsKin.D	18-36	2500	4	Clim.	4-5 x6½	GorK	4
Appleton 1921	12-20	1500	4	Buda	4-4¼x5½	G,K	2-3
Aro 1921	3-5	550	4	Own	1-4½x5	Gas.	1
Aultman-T.	15-30	2200	4	Clim.	4-5 x6½	G,K	4
Aultman-T.	22-45	3850	4	Own	4-5½x8	G,K	6
Aultman-T.	30-60	5000	4	Own	4-7 x9	G,K,D	8
Automot. B-3	12-24	1785	4	Here.	4-4 x5	Gas.	2-3
Avery,SR.Cul.	5-10	....	4	Own	4-3 x4	G,K	..
Avery Cult-C	.....	....	3	Own	6-3 x4	G,K	..
Avery B	5-10	....	4	Own	4-3 x4	G,K	2
Avery C	.....	....	4	Own	6-3 x4	G,K	..
Avery	8-16	....	4	Own	2-5½x6	G,K,D	2-3
Avery	12-20	....	4	Own	4-4¾x6	G,K,D	2-3
Avery	12-25	....	4	Own	2-6½x7	G,K,D	3-4
Avery	14-28	....	4	Own	4-4½x7	G,K,D	3-4
Avery	18-36	....	4	Own	4-5½x6	G,K,D	4-5
Avery	25-50	....	4	Own	4-6½x7	G,K,D	5-6
Avery	45-65	....	4	Own	4-7¾x8	G,K,D	9-10
Bates	15-25	....	4	Own	4-4¼x6	Ker.	3
Bates Mule H	15-25	....	4	Midw	4-4½x5¼	Gas.	3
Bates Mule F	18-25	....	*2	Midw	4-4½x5¼	Gas.	3
Bates Mule G	25-35	....	*2	Midw	4-4½x6	Gas.	3-4
Bean	8-16	....	*1	Own	4-3½x4	G,K	2-3
Beeman G	2-4	315	4	Own	1-3½x4½	Gas.	½
Best	30	....	*2	Own	4-4¾x6½	G,K,D	4
Best	60	....	*2	Own	4-6½x8½	G,K,D	8-9
Boring 1921	....	1850	3	Wauk	4-4¾x5¾	GorK	2
Burn-Oil, 1921	15-30	1650	4	Own	2-6¾x7	Ker.	3-4
Capital	15-30	1000	2	Own	4-4¾x6	Gas.	3
Case	10-18	800	4	Own	4-3½x5	GorK	2
Case	15-27	1680	4	Own	4-4½x6	GorK	3
Case	22-40	3100	4	Own	4-5½x6¾	GorK	4-5
Caterpillar T11	25	4250	*2	Own	4-4¾x6	Gas.	4
Caterpillar T16	40	6500	*2	Own	4-6½x7	Gas.	6
Centaur	5-21½	455	2	N Way	2-4½x4½	GorK	1-9
Chase	12-25	1725	3	Buda	4-4¼x5½	GorK	2-3
Chicago	40	2500	4	Own	4-4½x6	Gas.	4
Cletrac F	9-16	815	*2	Own	4-3¼x4½	G,K,D	2-12
Cletrac W	12-20	1495	*2	Own	4-4 x5½	G,K,D	2-11
Dakota 4	15-27	1750	3	Dom,	4-4¾x6	Gas.	3
Dart B.J.	15-30	2100	4	Buda	4-4½x6	Gas.	3-4
Depue A	20-30	2500	4	Buda	4-4½x6	Gas.	4
Dill D	20	2480	4	Cont.	4-4½x5½	Gas.	3
Dill R.W.	20	2980	4	Midw.	4-4½x6	Gas.	3
Do-It-All	~7	595	..	Own	1-4½x5	Gas.	..
Eagle F	12-22	1100	4	Own	2-7 x8	GorK	3-4
Eagle F	16-30	1850	4	Own	2-8 x8	GorK	4-5
E-B AA	12-20	1445	4	Own	4-4¾x5	G,K,D	3
E-B Q	12-20	925	4	Own	4-4¾x5	G,K,D	3
E-B	16-32	2000	4	Own	4-5½x7	G,K,D	4
Evans	18-30	2000	4	Buda	4-4½x6	G,K	3
Fageol D	9-12	1525	4	Lyc.	4-3½x5	Gas.	2
Farm Horse B	18-30	1885	4	Clim.	4-5 x6½	G,K	3-4
Farquhar	15-25	....	4	Buda	4-4½x6	G,K,D	3-4
Farquhar	18-35	....	4	Own	4-6 x8	G,K,D	4-5
Farquhar	25-50	....	4	Own	4-7 x8	G,K,D	6-7
Fitch 4	20-35	....	4	Clim.	4-5 x6½	GorK	3-4
Flour City	20-35	....	4	Own	4-5¼x6	Ker.	4-6
Flour City	30-50	....	4	Own	4-6¾x7	Ker.	6-8
Flour City	40-70	....	4	Own	4-7½x9	Ker.	8-1
Fordson	.....	625	4	Own	4-4x5	G,K	2
Fox E	20-40	3100	4	Own	4-5½x7½	G or K	4
Franklin G	18-30	4000	*2	Clim.	4-5 x6½	G or K	3-3
Franklin C	18-30	3350	*2	Clim.	4-5 x6½	G or K	3-4
Franklin G2	18-30	4350	2	Clim.	4-5 x6½	G or K	3-4
Frick A	12-20	1200	4	Erd.	4-4 x6	G,K	2-3
Frick C	15-28	1600	4	Beav.	4-4¾x6	G,K	3-4
G-O G	14-28	$1485	4	Wauk.	4-4½x5¾	G or K	3
Grain Belt A	18-36	2150	4	Wauk.	4-4¾x6¾	G or K	4
Gray 1920	18-36	2000	3	Wauk	4-4¾x6¾	Gas.	4
Ground Hog	19-31	2000	4	Erd.	4-4 x6	G or K	3
Gt. Western S.	20-30	1950	4	Beav.	4-4¾x6	K	4
Hart-Parr 2	20	995	4	Own	2-5½x6½	K,D.	2
Hart-Parr 3	30	1595	4	Own	2-6½x7	K,D.	3
Heider D	9-16	1170	4	Wauk	4-4¼x6¾	G,K	2
Heider C	12-20	1395	4	Wauk	4-4½x6¾	G,K	3
Heider Cult	6-10	1050	4	LeR.	4-3½x4½	Gas.	1
Hicks	20-30	....	4	....	4-4½x6	K or G	4
Huber Light 4	12-25	1185	4	Wauk	4-4½x5¾	G or K	3
Huber Super 4	15-30	1885	4	Midw.	4-4½x6	Gas	3
Illinois, Super-Drive C	18-36	2375	4	Clim.	4-5 x6½	G,K	4
Imperial I	40-70	5000	4	Own	4-7½x9	G,K,D	10
Indiana F	5-10	895	2	LeR.	4-3½x4½	Gas.	1-2
International	8-16	900	4	Own	4-4½x5	G,K,D	2
International	15-30	1750	4	Own	-5½x8	G,K,D	4
J-T N	20-40	3485	*2	Chief.	4-4¾x6	G,K,D	3-4
Klumb I	16-32	1650	4	Clim.	4-5 x6½	....	..
Knudsen 132	25-45	2500	4	Own	4-5 x9	Gas	4-6
LaCrosse M	6-12	650	4	Own	2-4 x6	G,K	1
LaCrosse G	12-24	985	4	Own	2-6 x7	G or K	3
Lauson 12-25	12-25	1495	4	Midw	4-4½x5¼	Gas.	3
Lauson 15-25	15-25	1685	4	Beav.	4-4½x6	G or K	3-4
Lauson 21	15-30	1985	4	Beav.	4-4¾x6	G or K	3-4
Lauson Road	15-30	2225	4	Beav.	4-4¾x6	K	....
Leader L	12-18	1095	4	Own	2-6 x6¼	G,K,D	2-3
Leader N	16-32	1985	4	Clim.	4-5 x6½	G,K	3-4
Leader GU	13-35	2775	*2	Clim.	4-5 x6½	G,K	3-4
Leonard I	20-30	2530	4	Buda	4-4½x6	G,K	3
Liberty A	18-32	2175	4	Clim.	4-5 x6½	G,K	4
Linn H4J	40~	4500	*	Cont.	4-4½x5½	Gas	4
Linn W	60	5100	*	Wauk	4-5 x6¼	Gas	6
Little Giant, D	16-22	2200	4	Own	4-4½x5	K	4
Little Giant, A	25-35	3300	4	Own	4-5½x6	K	6
Lombard	35-150	....	*2	....	6-5½x6¾	Gas.	16
Lombard	50	....	*2	....	4-4¾x6½	....	5-10
Magnet B	14-28	1877	4	Wauk	4-4½x6¼	K&G	3
Master Jr.	5-10	585	..	LeR.	-2¾x4	Gas.	1
MerryGar1921	2	230	2	Evin	1-2⅝x2½	Gas.	..
Minne. All-P	12-25	1200	4	Own	4-4½x7	G or K	3
Minne. Gen.F	17-30	1850	4	Own	4-4¾x7	G or K	3-4
Minne. Med.Duty	22-44	3300	4	Own	4-6 x7	G or K	5-6
Minne. HeavyDuty	35-70	4600	4	Own	4-7½x9	G or K	8-9
Mohawk 1921	8-16	785	2	Light	4-3½x4½	K or G	1-2
Moline Uni. D	9-18	990	2	Own	4-3½x5	Gas.	2-3
Moline Orch.	9-18	1075	2	Own	4-3½x5	Gas.	2-3
Motor Macult.	1½	135	2	Own	1-2¼x3½	Gas.	..
Motox	15-30	2250	4	Buda	4-4½x6	Gas.	3-4
NB 1	3-6	425	4	Own	2-3¾x4	Gas.	¾
NB 2	3-6	425	4	Own	2-3¾x4	Gas.	¾
Nichols-Shep. 23-42.	20-42	3100	4	Own	8 x10	G or K	3-6
Nichols Shep. 25-50	25-50	3460	4	Own	9 x12	G or K	4-7
Nilson Jr. E	15-25	1775	4	Wauk	4-4¼x5¾	G or K	3
Nilson Senior.	20-40	2475	5	Wauk	4-5 x6¼	G,K	4
Oil Pull K	12-20	1485	4	Own	2-6 x8	K,D	3
Oil Pull H	16-30	2285	4	Own	2-7 x8½	K,D	4
Oil Pull G	20-40	3175	4	Own	2-8 x10	K,D	5-6
Oil Pull E	30-60	4500	4	Own	2-10x12	K,D	8-10
Oldsmar Gark	2½-5	395	4	Own	1-5½x5½	Gas.	2½
Oliver A	15-30	....	*2	Beav.	4-4½x6	G or K	3-4
Once Over Tiller Mark 6	12-25	3000	4	Strns	4-4½x6	Gas.	2
Parrett K	15-30	1950	4	Pitt	4-4½x6	G,K	3
Peoria L	12-25	1785	4	Clim.	4-5 x6½	G,K	3
Pioneer G	18-36	....	4	Own	4-5½x6	G,K,D	4
Pioneer C	30-60	....	4	Own	4-7 x8	Gas.	10
Planet Jr.	5-10	950	2	LeRoi	4-3½x4½	Gas.	1
Plowman A	15-30	1995	4	Buda	4-4½x6	G,K	3-4
Port Huron A	12-25	$1700	4	Chief	4-3¾x6	G,K	3
Prairie Dog. I	9-18	650	3	Wauk	4-3¾x5½	Gas.	2
Prairie Dog. D	15-30	1250	4	Wauk	4-4½x6¼	Gas.	3
Ranger Cul. T-20	8-16	....	4	LeR.	4-3½x4½	Gas.	1
Reed A	15-30	1985	4	Wauk	4-4½x6¼	G or K	3-4
Reed A-1	13-36	2185	4	Wauk	4-5 x6¼	Gas.	4
Reliable	10-20	885	4	Own	2-6 x7	Ker.	2
Rex	12-25	1600	4	Wauk	4-4¼x5¾	G or K	3
Russell	12-24	1500	4	Own	4-4¼x5¾	G or K	2-3
Russell	15-30	2200	4	Own	4-5 x6½	G or K	3-4
Russell	20-35	3000	4	Own	4-5½x7	G or K	4-5
Russell	30-60	5000	4	Own	4-8 x10	G or K	8-10
Samson M	....	....	4	Nor	4-4 x5½	G,K	2
Sandusky J	10-20	1250	4	Own	4-4¼x5½	G,K,D	2
Sandusky L	15-35	1750	4	Own	4-5 x6½	G,K,D	4
Shawnee Com.	6-12	....	2	LeR.	4-3½x4½	Gas.	10
Shawnee Com.	9-18	....	2	Gray	4-3½x5	....	..
Shelby D	15-30	....	4	Beav.	4-4¾x6	G,K	3
Shelby C	10-20	....	4	Erd.	4-4 x6	G or K	2-3
Short Turn	20-40	1500	3	Beav.	4-4¾x6	G,K	3
Square T A	18-35	2075	3	Clim.	4-5 x6½	G,K	3
Steady Pull	12-24	1485	4	....	4-4 x5	Gas.	3
Stinson 4E	18-36	1835	4	Beav.	4-4¾x6	G,K	4
Stone	20-40	2250	4	Beav.	4-4¾x6	G,K	4
Tioga 3	15-27	2625	4	Wisc.	4-4½x6	Gas.	3-4
Titan	10-20	900	4	Own	2-6½x8	G,K,D	3
Topp B	30-45	3500	4	Wauk	4-4¾x6¾	Gas.	3-4
Toro Cultivator	6-10	....	3	LeR	4-3½x4½	Gas.	2
Townsend	10-20	805	2	Own	4-6½x7	Ker.	2-3
Townsend	15-30	1485	2	Own	4-7 x8	Ker.	3-4
Townsend	25-50	2750	2	Own	4-8½x10	Ker.	4-8
Traction Motor	40-50	....	4	....	8-3½x5	Gas.	4-5
Traylor TE	6-12	715	4	Erd.	4-3½x4½	Gas.	1-2
Triumph E	18-36	2450	2	Erd.	4-4¾x6	Ker.	4
Trundaar 1C	25-40	3750	*2	Wauk	4-5 x6¼	G or K	4
Turner 1921	14-25	1295	4	Buda	4-4¼x5½	G,K	3
Twin City	12-20	1580	4	Own	4-4¼x6	G,K	3
Twin City	20-35	3175	4	Own	4-5½x6¾	G,K	5
Twin City	40-65	5250	4	Own	4-7¾x9	G,K	8
Uncle Sam C2	12-20	1385	4	Weid.	4-4 x5½	G	2-3
Uncle Sam D1	20-30	2300	4	Beav.	4-4¾x6	G or K	3-4
Uncle Sam D21	20-30	1985	4	Beav.	4-4¾x6	G or K	3-4
Universal	1-4	475	2	Own	1-3½x5	G	1
Utilitor 501	2½-4	380	4	Own	1-3½x4½	G	1
Velie Biltwell	12-25	1750	4	Own	4-4½x5½	G,K,D	3
Victory 1921	9-18	1350	4	Gray	4-3½x5	Gas.	2
Victory 1921	15-30	1750	4	Wauk	4-4¼x5¾	Gas.	3
Vim B	15-30	1650	4	Wauk	4-4¾x5¾	G,K	3
Wallis K	15-25	1600	4	Own	4-4¼x5¾	G,K	3
Waterloo N	12-25	1450	4	Own	2-6½x7	G,K	3
Webfoot 53	28-53	5000	*2	Wisc.	4-5¾x7	G,D	6
Wellington B	12-22	....	4	Erd	4-4 x6	Ker.	2-3
Wellington F	16-30	....	4	Chief	4-4¾x6	Ker.	3-4
Western, 1920	16-32	2100	4	Clim.	4-5 x6½	Gas.	4
Wetmore	12-25	1650	4	Wauk	4-4 x5¾	G,K	3
Wharton E	12-20	1800	3	Buda	4-4½x5½	Gas.	2
Whitney	9-18	....	4	Own	2-5½x6½	Gas.	2
Wichita T	15-30	2000	4	Beav.	4-4½x6	G,K,D	3-4
Wisconsin E	10-30	2250	4	Clim.	4-5 x6½	G or K	3
Wisconsin F	20-40	2150	4	Wauk	4-5 x6¼	G or K	4
Wisconsin, H	22-40	2800	4	Clim.	4-5½x7	G or K	4-6
Yuba 12-20	12-20	2470	*2	Wisc.	4-4½x6¾	G,K,D	3
Yuba 15-25	15-25	2925	*2	Wisc.	4-4¼x6	G,K,D	..
Yuba 20-35	20-35	3975	*2	Wisc.	4-5¾x7	G,K,D	4
Yuba 25-40	25-40	4417	*2	Wisc.	4-5½x7	G,K,D	..
Zelle	12-25	....	4	....	4-4¼x5½	G or K	3

ABBREVIATIONS: G—Gasoline. K—Kerosene. D—Distillate. Plow capacity varies in relation to operating conditions. Figures are based on 14 in. plows. Engine Make: Beav.—Beaver. Clim.—Climax. Cont.—Continental. Dom.—Domas. Evin.—Evinrude. Here.—Hercules. LeR.—LeRoy. Midw.—Midwest. Nway.—New Way. Nor.—Northway. Strns.—Stearns. T.C.—Twin City. Wauk.—Waukesha. Weid.—Weidely. Wis—Wisconsin. *—Crawler type. All others are wheel type.

COMING MOTOR EVENTS

AUTOMOBILE SHOWS

New York	Electric Exposition	Sept. 28-Oct. 8
Peoria, Ill.	National Implement and Vehicle Show	Sept. 30-Oct. 8
Cincinnati	Fall Automobile Show	Oct. 1-8
Flushing, N. Y.	Queen's County Automobile Show	Oct. 10-15
Pittsburgh	Automotive Association Fall Show	Oct. 15-22
St. Louis	Automobile Exposition	Oct. 15-22
Little Rock, Ark.	Little Rock Automobile Dealers' Assn.	Nov. 11-19
Jersey City	Second Annual Show	Nov. 14-19
Chicago	Automobile Equipment Show	Nov. 14-19
New York	Automobile Salon	Nov. 27-Dec. 3
Chicago	Automobile Salon	Jan. 28-Feb. 3
New York	National Automobile Show	Jan. 7-13
Cleveland	Cleveland Automobile Mfrs.' and Dealers' Assn.	Jan. 14-21
Buffalo	Buffalo Automobile Dealers' Assn.	Jan. 14-21
Chicago	American Road Builders' Convention and Show	Jan. 17-20
Chicago	National Automobile Show	Jan. 28-Feb. 3
Minneapolis	Tractor Show	Feb. 6 to 11, inclusive
Minneapolis	Automobile Show	Feb. 6 to 11
Winnipeg, Canada	Canadian Automotive Equipment Assn. Show	Feb. 6-11
Kansas City	Kansas City Motor Car Dealers' Assn.	Feb. 9-16
Louisville, Ky.	Louisville Automobile Show	Feb. 20-25
Des Moines	Winter Automobile Show	Feb. 26-March 3
Brooklyn	Eleventh Annual Show	March 4-11
Newark, N. J.	Newark Automobile Dealers' Assn.	March 11-18

RACES

Los Angeles	Speedway Race	Nov. 24

FOREIGN SHOWS

Paris, France	Paris Motor Show	Oct. 5-16
Olympia, England	Automobile Show	Nov. 3-12
London	British Motor Show, Motor Mfgs. and Traders	Nov. 4-11
Paris	Aviation Exhibition	Nov. 12-27
Santiago, Cuba	Annual Automobile Show	March, 1922
Rio de Janeiro, Brazil	Automotive Exhibition	September, 1922

CONVENTIONS

Salt Lake City	Intermountain Automotive Trades Assn.	Oct. 8
Chicago	Twenty-eighth Annual Convention National Implement & Vehicle Association	Oct. 12-14
Oakland, Calif.	International Traffic Officers' Assn.	Oct. 24-29
Omaha	International Automobile Congress	Nov. 3-5
Cleveland	National Tire Dealers' Association	November
New York	Service Managers' Convention	Nov. 15-16
Columbus, O.	Ohio Automobile Trade Assn. Meeting	Dec. 12, 13, 14

Sparks from the Show Circuit

HARTFORD DEALERS' SHOWS

Hartford, Conn., Oct. 4.—Members of the Hartford Automobile Dealers' Assn. have voted to hold a fall enclosed car show Oct. 27, 28 and 29. S. A. Miner, Pierce-Arrow dealer and one of the pioneer members of the association, has given the use of his new sales and service building. D. A. Burnham, D. B. Roberts and F. W. Williams form the show committee. The dealers have voted to give the proceeds of the show to the Boy Scouts.

The Hartford dealers' association also will hold an annual show the latter part of February. The same show committee has this in charge.

ATLANTA'S FALL SHOW OCT. 13

Atlanta, Oct. 1—The 1921 fall tractor, truck and automobile show, held annually the past four years in connection with the Southeastern Fair, this year promises to be the important features of the fair, virtually all of the space in the automobile building having already been taken. The exhibits will include every type of automotive carrier, trucks and passenger car, as well as tractors and automotive accessories. The tractor exhibits will be under canopy outside the automobile building.

The fair opens Oct. 13, and continues for 10 days.

QUAKERS TO ENTER SHOW

Richmond, Ind., Oct. 4.—Plans are being made by the Wayne County Automobile Assn. to enter the Industrial Exposition to be held October 27, 28 and 29. This will be decided definitely at a later date. The exposition is being held under the supervision of the Chamber of Commerce.

SOUTHERN SHOW IN FEBRUARY

Atlanta, Oct. 1—The 1922 Southern Automobile Show will be held Feb. 11 to 18 at the Atlanta Auditorium, according to plans formulated at a special meeting of the Atlanta Automotive Dealers' Assn. the latter part of September. The show will again be under the auspices of the local association, and the personal management of Virgil Shepard.

The committee in charge has already disposed of 12,000 sq. ft. of the floor space and indications are that the 1922 show will be as large as any of its kind ever held in the south.

At this meeting W. B. Fitzgerald, who has been secretary of the local organization since it was first formed, tendered his resignation. He has accepted a position as general manager of the used car clearing house organized here by authorized Ford dealers, and will devote his full time to the new position.

BOSTON CONSIDERING SHOW

Boston, Oct. 1—The directors of the Boston Automobile Dealers' Assn. are taking a referendum among the members asking in a questionnaire what they think about holding an enclosed car show. The letters went out last week asking, first, if members would support one, and, secondly, what would be the most convenient time. Some of the members have talked of having their own show week, and the association was asked to consider it as a whole. Boston was one of the first cities in the country to have an enclosed car show, and it was very successful some years ago.

SHOWS FEATURE ON COAST

Sacramento, Oct. 1—Automobile shows have been a feature of every county fair in California this fall, from the Oregon line to Mexico. Yuba county held its first fair this year, and while but half a dozen machines were on display, the automobile show was one of the most popular features on the grounds.

At the Glenn, Sonoma, Napa, San Joaquin, Kings, Tulare and Riverside fairs, automotive shows were held in tents. At the Fresno fair a building was provided, the only one in the circuit of the fairs.

Dealers in all the cities where the fairs have been held say they have found the shows a substantial aid to business.

CANCEL ENCLOSED CAR SHOW

Columbus, O., Oct. 1—Because of some discord among the dealers the proposed enclosed car show, which was scheduled to have been held at Memorial hall, this city, Oct. 10 to 13 inclusive, has been called off. The show was to have been under the auspices of the Columbus Automobile Show Co.

KOKOMO AIR MEET SUCCESS

Kokomo, Ind., Oct. 1—The first national aviation "invitational meet" has closed, after entertaining more than a score of aircraft manufacturers, a dozen independent commercial pilots, several retailers of aircraft, and a dozen U. S. Air Service pilots and officials, and sundry other folk actively connected with the industry. Probably 65,000 persons visited the Curtiss-Indiana Airdrome, where the meet was staged, in the four days of the program.